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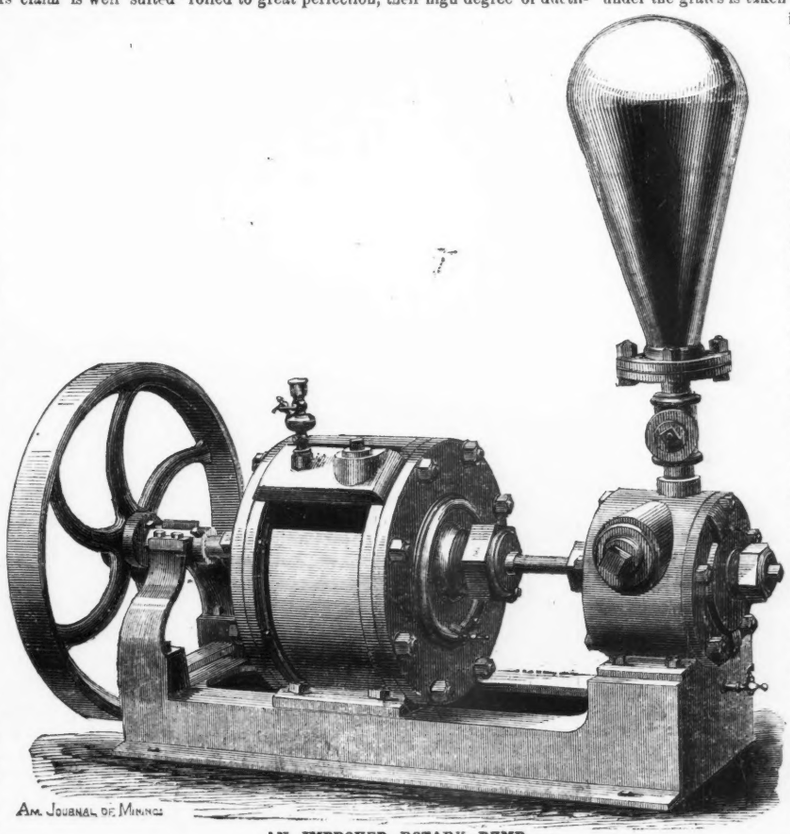
A ROTARY PUMP.

Pumps are amongst the greatest necessaries of deep mining, as without them it is impossible to keep the mine in a condition fit for working. A pump that is not possessed of considerable power or is liable to get out of order, is in many cases useless, and our Pennsylvania readers will remember how inefficient many of the pumps used in the coal mines proved during the late bad weather. Our illustration represents a pump which the manufacturers claim is well suited for mining purposes owing to its compactness, simplicity and discharging capacity. The packing of the piston is self-adjusting under any pressure, and the pump is free from leakage. A vacuum of twenty-eight inches is maintained in the pump. At recent trials made in the Brooklyn Navy Yard, a constant vacuum of twenty-nine and a-half inches was kept up, and the same amount of water was delivered with the same power as that given by the best steam pump, the latter having the advantage in the cubic contents of its cylinder. This pump may be used to raise any liquids, or to exaust air or gases. Further details may be obtained by addressing the Metropolitan Rotary Engine Co., 14 Second Avenue; or Room 10, 181 Pearl street, New York.



AN IMPROVED ROTARY PUMP.

Swedish Metallurgy.

The superiority of Swedish iron is too well known to require any corroboration, and it is generally attributed to the manner of reducing and the combustibles attending the smelting of the ores, whereas the character of the ores themselves contribute quite as much to the successful results. All Swedish ores are of igneous origin and partake of a magnetic nature, many of them coming under the denomination of glance ore. Their proportion of iron varies from 45 to 50 per cent., and they are all of extreme purity. Sulphur can only be detected in very small quantities, and the strongest analysis fails to discover any thing beyond the merest trace of that enemy to iron —phosphorus. The iron produced from these ores is endowed with a steely character, rendering it much sought after for the manufacture of steel of superior quality. There are 500 mines in operation in Sweden, which yielded in 1864 half a million tons of ore. The pigs are all made with wood charcoal, and their price varies from £4 to £5 per ton, their annual amount being about 300 000 tons. All refining processes are carried on in furnaces heated with wood charcoal, and the manufacture of bar iron is conducted with remarkable care and attention. It is, therefore, not surprising that a combination of natural and artificial advantages should give rise to superior productions. The price of bar iron varies from £8 to £10 per ton delivered at the port nearest the works, but the amount of the annual production has not yet exceeded 200 tons. At Motala is situated the principal establishment in Sweden for the manufacture of commercial iron. The, plates, and the various sections, such as angle iron, tee, channel, and numerous others are rolled to great perfection, their high degree of ductility and tenacity rendering them well adapted for the building of iron vessels, and for which purpose there is a considerable demand for them, beyond what can be satisfied as the annual production of plates is only at the rate of 5,000 tons per annum. The price of the plates not exceeding, single in weight, 4 cwt., is £20 per ton, delivered on board in any neighboring port. About five years ago the Bessemer process was introduced into Sweden, and has effected a great transformation in this especial branch of industry; its annual production in 1864 was 3,200 tons. That of cast steel exceeded for the same year 4,500 tons.—*Engineer.*

Apparatus for Consuming Smoke.

Henry Turner, of Leeds, Eng., has an improved apparatus for consuming smoke and economizing fuel, which consists mainly of a series of retorts or vessels, into which the fuel is charged through closed hoppers. These retorts are heated by fires, which are disposed underneath them; and when the fuel is partly consumed it is forced out of the retorts into grates, which consist of one or more plates, in which are formed dismond-shaped slots. The grates partly turn round, in order to discharge the cinders into the ash-pit. The gases arising from the combustion pass over the fuel, and are thus consumed. The smoke from the fire under the grates is taken over the main fire-grate, and is then turned into a flue.

Misrepresentation in Prospectuses.

A good deal of interest has been excited by the decision of the House of Lords on appeal, in the case of "The Central Railway Company of Venezuela vs. Kisch." Substantially this decision amounts to this—that fraudulent misrepresentation or wilful concealment in a prospectus of important facts vitiates contracts for the taking of shares by applicants, and that it is no answer to allege that the truth might have been known upon enquiry. Mr. Kisch was, consequently, relieved from liability, and the company was condemned in costs. As it is believed there are some important companies whose shareholders are directly interested in this very question, the decision of the House of Lords has created something like dismay invarious quarters; and in several cases, well known, that are now on their way to the court as a last resort, the shareholders have had their hopes greatly strengthened by it.—*London Mining Journal.*

The Mexican Mountain Railway.

An enterprise of unusual difficulty, and without a parallel in some points, is contemplated in a railway from Vera Cruz to Mexico. The elevation to be reached at the summit is 8,400 feet, and this actual height must be climbed from the ocean level in a distance of 150 miles. The gradient is for great distances, as much as 1 in 25, and this with many and short curves. Comparing the actual elevation reached with the highest already constructed, we find it greatly surpasses them, while in no other case is the whole hill climbed, as in this case, from the very foot or ocean level. Thus the highest in Great Britain—the Caledonian—reaches to but one fifth of this elevation, The Baltimore and Ohio railroad mounts to 2,626 feet; and the intended summit of the Mont Cenis railroad is 5,815 feet.—*Mechanics Magazine.*

It may not be generally known that portions of this road have rendered valuable assistance in the transportation of troops and supplies during the war;

two hundred miles of it being in running order—one hundred miles at either end of the line. The road over the mountains is graded, and awaits the laying of the rails. European capitalists have the enterprise in charge, and although the affairs of the company are in a very complicated condition at present, it is anticipated that, with the settlement of the present strife, the work will be pushed forward to completion. [EDS. JOURNAL OF MINING.]

Destroying Explosive Gases in Collieries.

A correspondent writing from Clausthal gave in last week's JOURNAL OF MINING a short description of a process for the destruction of explosive gases in coal and other mines, in order to render them safe for miners to enter, by means of electricity. We now learn that a similar plan is about being practically tested at the Brockmoor Colliery, England, and is expected to be generally adopted. The inventors state in their patent specification: According to our invention explosive gases are destroyed in the most distant workings of coal or other mines, by igniting and exploding any accumulations of such gases, by currents of electricity, or by other suitable means, when required, in order to render them safe and accessible to the miners or others previous to descending into or entering the same. For this purpose, in order to cause the gas which may accumulate in the most distant workings to explode when desired, we prefer to employ a current or currents of electricity, conveyed to such parts by means of suitable conductors of electricity, from a galvanic or other battery, placed at a suitable distance, interior of exterior of the mine. At the part or parts of the mine where it is desired to cause an explosion of gas or fire-damp to take place, the conductors of electricity are connected by a piece of platinum passing through or into a fusee or other explosive compound or material, so that when the electric circuit is formed, by connecting the opposite poles of the battery, the piece of platinum will become heated or fused, so as to ignite gas in the locality to explode. By causing such explosion to take place at the "head" or extremity of the workings the foul air and gases will be driven out towards the main shaft or entrance to the mine, after which the passage of atmospheric air into the workings will soon render the same safe for the miner to enter. Mechanical, chemical, or other means may be resorted to for producing combustion, and causing accumulations of noxious gases to explode in distant parts of a mine, when desired, for the purpose of destroying such gases, in accordance with our invention—for instance, detonating or other substances may be ignited or exploded by percussive force, brought into action by electro-magnetism or other means when desired.

Pennsylvania Products.

The three great staples in the production of which Pennsylvania is pre-eminent are coal, pig iron, and petroleum. The immense extent of the industries involved in these products, and the enormous value to which each of them has risen of late years, are chronicled in the report of the Board of Trade for 1866, just published in Philadelphia. The product of coal in Pennsylvania during the year is estimated in round numbers at 16,000,000 tons, or one fourth more than in 1860; and its value at the markets of first delivery was at least $80,000,000. The product of petroleum during the year is given at nearly 90,000,000 of gallons, valued at over $47,200,000. The product of pig iron during the year is given at 646,600 tons, valued at over $31,600,000 The aggregate value of coal, petroleum, and pig iron, for the year was $158,231,243. The *Press*, in speaking of the great value of these resources, which, in the present industrial development of the country, may almost be considered peculiar to Pennsylvania, remarks: "Our coal product is worth as much as the coal product of the Pacific States, and our pig iron and petroleum yield yearly a richer revenue than was ever obtained from the famous silver mines of Mexico and Peru." We are sure the Pennsylvanians are justified in boasting of the gigantic growth of these profitable industries. When they can take from the bowels of their State in one year articles valued at nearly one hundred and sixty millions of dollars, besides all the vast agricultural and pastoral productions of its surface, they must be allowed the credit of a rich inheritance and a re plendent domain.—*Ex.*

Iridium in Canada.

Mr. Meves, of Madoc, states that iridium exists along with the other materials with which gold has been found in the Richardson mine. The presence of iridium, says the *Keystone News*, is not mentioned in the reports of Dr. Hunt and Mr. Michel; but as Mr. Meves has obtained his specimens quite recently, they may have been taken from different parts of the vein or "pocket," as this deposit has been called. Iridium is one of the rare metals, and is of extreme hardness. It was found in Californian gold, and its presence in gold coined at the United States Mint caused the destruction of several valuable dies, and from this led to its detection and removal. The same substance is found in gold in Chaudière, as also platinum, and an alloy of osmium and iridium, named iridosmine. The latter is very hard and durable, and is put to a practical use by pointing gold pens and in jewelling. Platinum, it need scarcely be remarked, is a most valuable metal, and if found in the gold region here, as is quite likely, would constitute of itself a valuable discovery. We mention this to encourage the explorers to have their eyes open to other things beside gold. Such a tract of country might also be expected to supply precious stones, as chalcedony, amethysts, and other varieties of colored quarts, jaspers, and even diamonds.

Original Papers.

THE MICROSCOPE:
Historcy of its Invention, its Geological Teachings, and its Uses, for the Miner, Mineralogist, and Chemist.

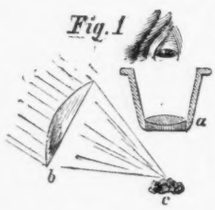
Written for the JOURNAL OF MINING, by P. H VAN DER WEYDE, M. D., late Professer in the Cooper Union, New York Medical College, and Girard College, Philadelphia.

No. III.—Continued from Page 202.

ARRANGEMENTS FOR ILLUMINATING OPAQUE OBJECTS.

As before remarked, for strongly magnifying lenses an extra arrangement is required to illuminate the object. The most common is represented in fig. 1.

Fig. 1



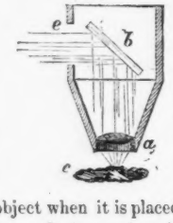
a represents a single achromatic lens; it consists of two lenses of different kinds of glass, as explained below. When a compound microscope is used, it is attached to the lower end of a tube, and is called the objective; at the upper end of the same tube is one or two larger magnifying glasses attached, called ocular. The drawing of the whole is omitted, to save room. *b* is a large plano-convex lens, concentrating the luminous rays in a small space, at the spot where the object is being examined.

Fig. 2

In fig. 2 is the Lieberkuhn reflector represented by *b*, concentrating the rays coming from below, and previously reflected by the plane mirror *b'* those rays illuminate the object *c* on all sides.

In fig. 3, the plane reflecting mirror *b* is simply a piece of thin plate glass, through which the eye looks without any perceptible loss of light; it is placed under an angle of 45° with the axis of the microscope, and thus reflects the light coming through a side opening downward through the lens on the object. This lens acts here in the same manner as the lens *b*, fig. 1, and concentrates the rays, the amount of which concentration may be modified by placing another lens before the side opening *e*. It is the best mode to bring much light on an object when it is placed almost in contact with the lens. It is an American invention by Smith, and was successfully executed by Wales. However, a few English microscope makers took afterwards a patent for it in England.

Fig. 3



The most important progressive step made since the invention of the microscope, was the correction of the coloring always produced in luminous rays when refracted by transparent media. The amount of this coloring increasing with the magnifying power of the lenses, it was a grave defect in all powerful microscopes. Newton being ignorant of the fact that different kinds of transparent media possess different dispersive qualities in regard to the different colors, had stated distinctly that such a correction was impossible, but the mathematician Euler (German), invented, in 1757, a method of combining lenses of glass and liquids which possess the precious quality of being free from the so-called prismatic (or rainbow) colors. Dollond (English) constructed, in 1758, lenses from two different kinds of glass, of which one compensated the coloring qualities of the other. Then Euler calculated which was the most advantageous combination, and found, in 1769, that lenses composed out of three glasses were the best; Dollond made them afterwards, and became celebrated for his telescopes, but it was only thirty years later that such lenses were made for the microscope, namely, in 1800, by Schaffrinsky, in Berlin. When, in 1807, Humboldt arrived in Paris with his American collection, Prof. Wildenow examined his specimens with such a microscope, made in Berlin, and they were manufactured in Paris, in 1812, by Charles.

Lenses made of two or more combined in such a way as to correct the coloring, are called *achromatic*, which means without color, and telescopes or microscopes containing such lenses, bear the same name.

Frauenhofer, in Munich, experimented in manufacturing different kinds of glass, and succeeded, in 1816, in making microscopic lenses of two combined glasses, which were perfectly achromatic, but the greatest progressive step in regard to the microscopic lenses was made in 1823, by Selligues, in Paris; he combined three or four small achromatic glasses, which each consisted of two lenses, and notwithstanding the universally adopted idea, that much light must be lost when passing it through six or eight lenses, he was so fortunate as to obtain in this way a much clearer image, larger field, greater power, and greater distance from the object examined, which at once gave unexpected advantages to microscopic investigation. Vincent and Chevalier in Paris, Goring and Tulley in London, Amici in Modena, Frauenhofer in Munich, followed at once up in applying this invention to their microscopes, and with the year 1823 a new era had dawned for the microscope.

It was also at that time that test objects were introduced by Chevalier, in Paris, intended to try the quality and power of the microscope, in the same manner as astronomers had long before used certain double stars to test the quality and power of the telescope.

Some attempts have been made of substituting for glass, diamond and other precious stones of a refractive power, higher than glass. Brewster, Wollaston, and Tulley, in England, and Ploessl in Vienna, have made several experiments in this line, but thus far without any remarkable result. However, there is no doubt that, theoretically, such microscopes would be more powerful than those of glass.

Lister (English) joined, in 1829, the glasses together with Canada balsam, the same as is done with photograpic lenses (but not with telescopes); and Ross made, in 1837, another improvement, namely, in making one lens movable in the combination, in order to correct the influence of the piece of glass covering the object under examination, and at the World's Fair, in London, in 1851, the best microscopes were exhibited by Smith and Beck, and also by Powell and Lealand.

Amici, of Modena, deserves in particular to be mentioned, as having worked arduously to the perfection of the instrument; when Mr. Rutherford, of

New York, brought him, in 1849, a new improved American lens, by Spencer, he at once set to work, improved on it. and made superior ones. A microscope made by Chevalier, in Paris, after Amici's plan, obtained a medal at the exhibition at the Louvre, and when, at the World's Fair, in Paris, in 1855, the jury were comparing the rival instruments, Amici, who was then almost eighty years old, brought a microscope of comparatively small dimensions, just made by him, which exhibited details in test objects, better than any larger instrument under examination. He obtained this result in his microscope by introducing a drop of water between the object and the object glass.

Since that time, several American makers have obtained the reputation that their microscopes are, at least, equal to the best foreign instruments. We must mention Spencer, Tollen, Grunow, of New York, Wales and others; and last, but not least, Zendmayer, of Philadelphia.

About the prices of microscopes, it must be observed that when we are satisfied with a magnifying power of less than two hundred diameters, the whole arrangement may be simple, and can be made by most opticians, but by using a magnifying power of three hundred and more diameters, the whole apparatus must be made more complex and careful, in order to handle, focus, and illuminate the objects properly, having the lenses centered correctly, etc. In this case, the expense of the stand alone, exclusive of the lenses, is nearly one hundred dollars; the eye-glasses cost from five to ten dollars each, and the object glasses, after Selligue's system, from ten to seventy-five dollars each, according to their power. Their value depends greatly on the sharpness with which they show details, and the entire freedom from any milkiness or fogginess in the appearance of the images; whatever be their power, if they give no clear images, they must be considered worthless.

Then there are, besides objective, and eye-glasses of different powers, many useful additions to the microscope, as condensing lenses, prismatic illuminator, dark well, parabolic reflector, Lieberkuhn, polarizing prisms, micrometers, for measuring the objects and power of the lenses, camera for drawing the objects seen, etc., all of which augment the price, so that a complete compound microscope costs from three hundred to six hundred dollars.

Lately the binocular microscope has been introduced, having two eye-glasses, and double tube, one for each eye. Of course it is still more expensive; some are worth about one thousand dollars. However, this arrangement has to be improved, before it gives the satisfaction we have a right to expect from a binocular microscope compared with the single-eyed.

TO BE CONTINUED.

(WRITTEN FOR THE JOURNAL OF MINING.)

THE ORIGIN OF PETROLEUM.

By Dr. Lewis Feuchtwanger.

The question whether petroleum or coal was first formed may be tested by the following remarks:—I will state that petroleum, which is a bituminous liquid, originating from the decomposition of marine and land vegetables, and sometimes even of animal remains, is found in such ancient rocks as do not contain a trace of the remains of land-plants, or animals, for we find it in rocks of various ages, from the lower silurian to the post tertiary, and from limestone and sandstones, as well as shales. Although there is no doubt that it is of organic origin, and it is proved in many instances that it is locally produced; for the fact that intermediate porous strata of similar mineral characters are destitute of bitumen shows that petroleum cannot have been derived from overlying or underlying beds, but has been generated by the transformation of organic matters in the strata in which it is met with. The name bitumen, or bituminous, applies to rocks which contain ready formed bitumen, either in a liquid or solid state, and the forms in which it occurs depend in a great measure upon the presence or absence of atmospheric oxygen, since by oxydation and volatilization the petroleum becomes slowly changed into asphalt or mineral pitch, which is solid at ordinary temperatures, and even by a continuance of the same action the bitumen may lose its fusibility and solubility, and become converted into a coal-like matter, which may be the albertile now ascertained to be an inspissated or hardened petroleum, found in rocks below the shales and allied to the devonian age. Petroleum is found in the birds-eye limestone of Canada and New York at Watertown, where it flows in drops from a fossil coral; in the Trenton limestone, where it fills the cavities of large orthoerata; in the Hudson river formation, near Albany, it occurs on the surface of a spring, and it issues from the Utica slate; in the Niagara limestone and in the medina red shales; in the devonian, as at Black rock; in the Niagara river, where it occupies cavities in fossils. At Enniskillen, in Canada, a deposit of solid bitumen comes to the surface from the limestone beds below. The rocks of the Hamilton group and Chemung contain the oil springs in Erie, Seneca and Cattaraugus counties of New York. The oil springs of Pennsylvania and Ohio come from the devonian sandstone, mostly passing through the overlying carboniferous strata. The petroleum of the island of Trinidad comes from the tertiary formation, and is associated with beds of lignite.

That coal is likewise derived from vegetation, or that coal is of vegetable origin, is beyond a doubt, and the plants like the sigillaria, calamites, lepipo dendroits and conifers, covering the dry lands, have principally contributed to the formation of coal, and have been produced by their decomposition. Mineral coal is pure carbon. Vegetable matter, when dry, consists of 50° pure carbon, 7· hydrogen, and 43° oxygen. During the decomposition the gaseous part escapes and leaves the rest of the carbon or coal with more or less of bitumen. The coal measures comprised in the carboniferous age and consisting of the permian, upper and lower coal measures, and Wilkesbarre grit are, according to historical geology, far above those regions where petroleum has been stated to exist; nor is it at all likely that peat swamps, which many modern scientific speculators have considered the primitive substance or origin of the coal. There is no sufficient ground for such an assumption, for the reason that the climate has exercised a most powerful influence on the growth of plants. Those of the coal period belonged to a moist warm climate, producing an exuberant growth. The sigillaria and calamites, which, from their present appearance, must have belonged to the tropics, could only have flourished in a moist region; and, as plants live mainly by means of the carbonic acid they receive through their leaves, and which is obtained from that contained in the atmosphere, it is certain that vegetable growth must have been more exuberant at that period than at colder temperate zones. The peat swamps of the present day are species of a temperate climate alone, and are too different in kind to warrant a comparison.

There can be no reasonable doubt in the mind of any person, after the comparison of the origin of the paleozoic bitumens, which have either derived from a marine vegetation, or from the remains of marine animals and the ferns, palms, and other tropical plants, which are stated to have formed the base or material for the coal, and the vastly unequal periods between the coal fields and the petroleum origin, that the latter is totally independent from the others, and that petroleum, which is accumulating in wells, or in places where a spouting well is struck, is on the line of an anticlinal axis, abounding in fissures into which the petroleum filters from the surrounding rock, and by the pressure of carburetted hydrogen, or of volatile matter which it gives off, it is forced to the surface as soon as a communication is effected with the external air. These fissures are natural reservoirs of petroleum, and in the oil region it is quite well known that the boring apparatus, on reaching a fissure, will sink suddenly several feet.

[WRITTEN FOR THE JOURNAL OF MINING.]

METALLIFEROUS VEINS AND MINERAL LIFE.

By A. Blatchly, M. E.

(No. V. Continued from Page 203.)

The absorption of fossils in the process of crystallization very closely resembles the assimilation of food in the operations of animal life Also the changes wrought by pseudomorphism.

A movement of atoms is absolutely necessary to effect these changes, and the force causing this movement appears to operate without any regard to the force of gravitation, as we see the bodies of crystals making every possible angle with the horizon.

In limestone the first appearance of veins is generally beside a crystal or a portion of one. Some are found so small as to extend less than an inch beyond the side of the crystal, and less than a line in thickness. In such cases the crystal is nearly or quite always imperfect, as though the power that would have been expended in forming the crystal, had not the vein been present, was expended in the growth of the vein. Both appear to be products of the same force. Hence we find, that in some rocks, as limestone, the greater part of the force is expended in the production of crystals and veins, which appear, in that rock, to be the effect of the resistance of force left after the limestone is crystallized. Hence we find the largest and most continuous veins in rocks where the metamorphic agencies have fully accomplished their work, and left a sufficient force for the formation of veins. In other rocks, as in some of the slates, this force appears to be almost wholly exhausted in the formation of veins; and crystals, except in the veins themselves, are quite unusual.

Metalliferous veins are probably a lighter manifestation of this force than crystals. Crystals contain only one substance, with one form for that substance, but veins contain many different substances, and show a greater diversity of forms, besides including within themselves all of the crystalline forms. They also show a more decided tendency to assume the vertical position, and display greater power in forcing apart enormous masses of rock.

It is probable that they continue to grow for longer periods, as it has not been demonstrated that a single vein has ever ceased to grow, unless it has been entirely excavated, as in mining operations; while, in prosecuting works in ancient mines, evidence is afforded of their continuous growth. Although veins are formed of all sizes, from a mere line to miles in extent, and hundreds of feet in thickness, it is not probable that the size, in all cases, is due to age, but that some rocks are in a more favorable condition for their growth than others, as some soils are in a better state for the growth of plants.

The smallest veins are formed in the solid rock, and although their substance is clearly and sharply defined from the enclosing rock, still there is no actual separation between them by fissures, that can be observed by the closest inspection; and if fractured, they finally adhere to the adjoining rock; but as they increase in size the separation becomes visible, and any force bearing on the enclosing rock

is more likely to make a fracture along the side of the vein, than at points where no vein exists; and when the vein is large, and of great extent, its sides are invariably fractured from the enclosing rocks. In countries where the earth's crust has not been greatly disturbed, the sides of veins show but comparatively little movement or polish—also where the veins are small. But when the surface disturbance of the earth has been great, and the veins extensive, the friction is great, and the polish on the sides of a hard quartz vein is equal to that produced by a lapidary.

This polish is not peculiar to metalliferous veins, but is found in all fissures, both horizontal and vertical, where the conditions of pressure and movement are found.

Hence we see that veins are formed first, and the fissures afterwards, in many, if not in all cases. In countries where the rocks have been greatly upheaved, and their strata are in nearly a vertical position, the veins are generally parallel with the strata of the country rocks; but where the strata are in nearly a horizontal position, the veins are usually nearly vertical. This shows that previously formed fissures may influence the direction of the growth of a vein, but that they cannot control it beyond a certain extent.

CONCLUDED IN OUR NEXT.

(WRITTEN FOR THE JOURNAL OF MINING.)

NICKEL ASSAY.

By J. HERBERT BRAMWELL, of Clausthal am Harz, Prussia.

The following method of assaying nickel ores and slags, determining not only the percentage of nickel, but simultaneously those of cobalt (an almost invariable associate). Copper and lead has been used by the writer with great success. It proposes a combination of Plattner's and Phillips' methods, involving manipulations in the wet and dry ways. Such alterations and additions have been made by the writer as were considered by him necessary to secure results whose accuracy could be relied upon.

The ore to be assayed should be pulverized in a mortar, and sifted through a fine hair sieve. One hundred assay pounds are weighed and dissolved in *aqua regia* and evaporated nearly to dryness; when sufficiently cool, a small quantity of sulphuric acid is added, and the mass evaporated gently to perfect dryness. Should, toward the end of this operation, the evolution of nitrous vapors still continue, a few drops of sulphuric acid must be added. The result of this operation is that we have converted all metals present, with the single exception of lead, into soluble sulphates, which are dissolved in boiling water, allowed to remain for a short time on the sand bath, filtered, and washed out frequently with hot water, taken off, *dryed*, *burnt*, and fused in a covered earthern crucible, according to the method given in Prof. Kerl's work, viz.:—With 2½–3 times its weight of the following admixture: Potash, KO CO_2—wheaten flour, 15–20 per cent., and 20 lbs. metallic iron, and the whole covered with a layer of common salt, placed in the muffel, gently heated at first, so that it may not overflow; when the ebullition has subsided the temperature is considerably raised, and at the end of 15–20 minutes, the assay is removed from the muffel. When cool the regulus is carefully extracted and weighed, and the percentage reckoned.

The solution from the first filtration is acidified with hydrochloric acid, and a current of sulphurretted hydrogen is passed through. Copper is precipitated as a sulphide (Cu S), as well as antimony, arsenic and tin, should they be present. This is thrown down on a filter thoroughly washed with hot water, and subsequently dissolved by digesting with nitric acid, evaporate to dryness, re-dissolve in hydrochloric acid, add water, boil and filter; two pieces of iron wire about two inches long and one-eighth inch in diameter, are placed in the solution, which is kept at a boiling point until all the copper is thrown down, which is confirmed when iron wire held in the boiling solution does not receive a coating of metallic copper; the supernatant liquor is poured off. In order to obtain the copper the flask is inverted in a porcelain dish, where the copper is collected. The pieces of iron should be carefully washed, so as to win any particles of copper which may adhere to them, and wash with hot water several times, so as to free the precipitate from any vestige of chloride of iron that may remain. It is now placed on the sand bath, and completely dried by a very low temperature, to prevent oxydation, which would vitiate the result; the product is weighed, and gives the percentage of copper.

The solution from the second filtration contains nickel and cobalt. Should iron be present in the ore, it would exist in this solution as an oxydal, and would be inconvenient for subsequent operations. It is, therefore, converted into an oxyd by boiling with nitric acid or chlorate of potassia. These three metals are thrown down by carbonate of potash, or carbonate of soda, filtered and washed out with boiling water, for the purpose of removing the soluble alkali, whose presence by the following drying and igniting process might lead to a fusing of the mass, which is undesired. This accomplished, cobalt, nickel and iron are converted into arseniates, and separated as such from other ingredients by fusion:—The substance to be operated upon is rubbed carefully together in an iron mortar, with 1½–2½ times its weight of metallic arsenic. The mixture is now placed in a covered crucible and brought under the muffel, which is closed and subjected to a bright red heat. The cover may be removed from time to time; and should no flames or fumes ascend, the assay may be removed at the end of ten or fifteen minutes, and allowed to cool slowly with the cover on. This operation must be repeated a second time, with the same amount of arsenic. The product is mixed with 300 lbs. of the previously given mixture of potash and meal, placed in a strong earthern crucible, and upon this one ladle of borax—25 lbs.; two ladles of pulverized glass—40–50 lbs.; in the absence of iron, 2–3 lbs. are mixed in with the potash and meal; cover the whole with one-fourth inch stratum of common salt, and add a small piece of charcoal. The crucible is subjected to a bright red heat, until the flaming at the mouth ceases; it is then surrounded with charcoal and subjected to a white heat for about 35 or 40 minutes. A good *speiss* has a spherical shape, accompanied by a green or black slag. Should the same be blue, it denotes a loss of cobalt, resulting from an insufficient quantity of iron.

REFINING.

In the removal of the arsenical iron from the speiss, a crucible used for smelting lead is broken lengthways in half. The foot having been previously knocked off, serves as a cover for iron assays. One of these halves, which we will call refining shell for convenience, is placed in the muffel, surrounded on three sides with charcoal and heated to an almost white heat. From 50–75 lbs. of borax are brought upon this refining shell, and when completely liquid, the speiss is placed in the same and fused with close muffel as possible. When this has taken place the door is partially opened, so that a current of air may enter. By the right temperature proto-arsenate of iron is oxydised, and the per-arsenate is formed, which the borax dissolves, taking a dark green or black color. So long as any iron remains and the proper temperature exists, scales of basic proto-arsenate of iron moving about on the surface of the speiss, and a rotatory motion of the same, is observed. When it becomes bright and motionless this period is at an end; the refining shell is quickly taken out, held on the surface of cold water until the regulus is quite hard, and then drawn through the water several times. To be assured that all iron is removed, the regal is fused quickly again with fresh borax, and immediately taken out; should the borax have a faint shade of blue it is good. By too high a temperature the regal remains bright, caused by the presence of too much iron, and is covered with a thick crust should the same be too low. An insufficient amount of iron will cause it to turn bright immediately after fusion, and cobalt will be scorified, seen in the deep blue color of the borax.

"DEARSENATING."

The object of this process is to expel the excess of arsenic. Having accomplished this, there remains the following constant combination:—(CO^4 As + Ni^4 As.) To effect this the regulus is placed in a small covered crucible, filled with powdered charcoal, and heated by a bright red heat ¼–½ an hour, taken out and weighed. This operation is repeated until the last two results correspond, which are carefully noted, being the weight of the combination above referred to. The regulus is then brought upon a refining shell and subjected to the same treatment as in the case of the iron; here, however, the regulus remains bright during the process, and so soon as little flakes begin to make their appearance on the regulus it is removed and held over water as before. Should the borax have a faint trace of brown in the immediate vicinity of the regulus it is considered good; should this, however, not be case, the operation is repeated until the same is noticed. The product weighed gives the amount of (Ni_4 As) and subtracted from (CO_4 As + Ni_4 As) already found, we have that of (CO^4 As) from a simple proportion we compute their percentages. The following example will make it clear:—(An ore has been assayed, and the amount of

Ni_4 As + CO_4 As = 20 lbs.
Ni_4 As = 15 lbs.
Difference ..... 5 = CO_4 As.

From their atomic weights we find that in (Ni_4 As) there is 60.7 per cent. nickel, and in (Co^4 As) 61.5 per cent. cobalt. We therefore make the following proportion:—If in 100 (Ni^4As): 60.7 per cent. nickel : : 15 : x per cent.

x = 9.1 per cent.

The same with cobalt.

100 (Co^4 As) : 61.5 : : 5 : x.
x = 3.07 per cent.

NOTE.—The weights used in the Clausthal Laboratory are those of the German system, according to which 100 lbs. assay are equal to five French grammes.

Miners' Lamps.

To make it impossible for miners to open safety lamps without being detected, Mr. John Hardy, according to the London *Mining Journal*, has invented a very simple means of sealing, without the use of any lock. When the staple has been put down over the eye (which is intended to hold the padlock), a small leaden plug or bolt is inserted in the eye. This bolt is cast with a large head at one end, and, when put in the lamp, the bolt is put in a horizontal press, which is fitted with two small dies. One stroke of a lever effects all that is required to close the lamp; the pressure forms the shank of the plug into a head, and both heads are impressed by the dies with any lettering or device that may be approved by the pit manager. These dies may be changed daily, and the leaden plugs, which can be cast by the score, have many advantages. Practically, they cost nothing beyond the trifling outlay for lead, since, when the lamps are returned to the keeper, the fastening is instantly cut in two with a pair of nippers, and can be recast in a few minutes. Certain detection would follow upon any tampering with the fastenings, because, even if a miner became possessed of the plugs, he could not produce the effect of the press, while, if he cut the plug which had been put in the lamp, he could not fasten it again. The saving effected by the abolition of padlocks would many times ontweigh the cost of the press and mould; and the process of fastening is speedier than by the use of padlocks.

Mining Summary.

GOLD AND SILVER.

Idaho.

According to the Montana *Post*, May 11, Quartz Laws were adopted by a convention of delegates representing the different mining districts held at Leesburg, Lemhi mines, April 20. As Salmon River is likely to monopolize considerable attention henceforth, we publish the laws in full:

QUARTZ LAWS OF LEMHI DISTRICT, I. T.

Whereas, Congress, by law, has authorized the miners in the several local mining districts, to make their own rules and regulations in regard to the location and holding of quartz claims not in conflict with the United States; therefore, be it

Resolved, That this district shall be known as the Lembi District, and shall extend from the mouth of Nappia's Creek, on Salmon River, up, including all the country drained by the waters of said river, on both sides above said creek, and including the country drained by said creek.

RULES AND REGULATIONS.

Article 1st. A claim in this district shall consist of of two hundred (200) feet in length, along the vein or lode, with all its dips, spurs and angles. Also, the right of drainage, tunnelling and such other privileges as may be necessary to the working of said claim, not in conflict with any vested rights.

Article 2d. Any person or persons who may hereafter discover a quartz lead, or lode, shall be entitled to one claim each, by location, and one by right of discovery; provided, that there shall be but one discovery claim on each lead or lode.

Article 3d. All persons locating quartz claims shall designate by name the lead or lode claimed, the course as near as may be in which it runs, and define the same by stakes or other land-marks, giving the names of all persons comprising the company by a notice placed thereon, and the number of feet claimed, and shall state their intention of working the same in company, together with the year, month and day when the same was located.

Article 4th. Any person or persons locating for a blind lead or lode shall not be allowed more than one hundred (100) feet in width, which distance shall be computed by an equal number of feet on each side of the stake or land marks first set.

Article 5th. All persons holding quartz claims in this district shall do, or cause to be done, fifty (50) dollars worth of work for each claim held, within six months from the date of record; the proof of said work having been done shall be the affidavit of two disinterested persons residents of said district, after having reviewed the ground or work. Said affidavit shall be taken before a Notary Public or Justice of the Peace and recorded with the Recorder of the district in a book kept for that purpose: and a compliance of the same shall make a bona-fide title against everybody except the United States Government, and the failure to peform the same within the time specified shall work a forfeit, and the claim or claims shall be subject to re-location.

Article 6th. All claims shall be recorded in the Recorder's's office in the district within ten (10) days from the time of posting notice; provided that the claim located is more than twenty (20) miles distant from the Recorder's office, the time shall extend to twenty (20) days; provided, further, that if the distance shall exceed thirty (30) miles from the Recorder's office, the time shall extend to thirty (30) days.

Article 7th. No person other than those authorized by Congress shall be entitled to hold claims in this district.

Article 8th. All persons locating claims in this district shall be residents of the Territory of Idaho, or shall be in the district at the time of location.

Article 9th. When a number of persons locate more than one claim lying together and adjoining each other, and wish to work the same in company, they shall have the right to do the amount of work required to represent one or more of their claims, as they may select, and not on each separate claim.

Article 10th. There shall be a Recorder for this district, who shall keep a record of all claims located; also, record of all affidavits showing that the amount of labor required to represent each claim has been performed; he shall return a certificate of each claim, giving the book, page and date of said record. The Recorder shall be allowed the sum of two dollars ($2) for recording and certifying for each claim.

Article 11th. The Recorder's certificate, showing that the necessary amount of labor has been performed to represent, shall be sufficient proof of the same.

Article 12. The Recorder shall not record any claim or claims that are already recorded and unforfeited.

Article 13th. A lead or lode shall not extend more than fifteen hundred (1500) feet from discovery, stake or land-mark, in either direction along the lead or lode, and persons claiming outside of those bounds shall designate the ledge by another name, and shall be entitled to the same or all rights as those making the first discovery.

Article 14th. It shall be the duty of the Recorder to keep books of record in a safe place and allow the public to examine them at any time in his presence.

Article 15th. All transfers shall be noticed in a book, for which service he shall receive fifty (50) cents for each claim.

Article 16th. The Recorder shall hold his office for one year, unless sooner removed by the vote of the majority of the quartz claim holders of this district.

Article 17th. The Recorder shall turn over to his successor all books and papers pertaining to his office.

Article 18th. It shall be the duty of the Recorder, at the request of twenty-five of the quartz claim holders, to post notices at five of the most public places in the district, calling a meeting to revise the laws or elect a new Recorder.

Montana.

From Bannock City correspondence of the *Post* we condense as follows: I visited the most noted ledges on which developments are made to such an extent as to prove them first class gold and silver producing mines. Following the course of Grashopper creek in an easterly direction, we entered what is called a canon, where the signs of bar mining still bear testimony to former prosperity. The mountains on the south side of the creek are abrupt and thickly covered with beautiful groves of fir and pine timber. On the north side it is more rolling, but bare, and literally covered with huge masses of quartz of every texture. The swoolen creek, at present, was *ad libitum*, covering the whole of the narrow creek bottom, and the only attempt at mining made now is in the side hills, which have invariably paid, no matter where tunnelling was done. Half a mile below town, Messrs. Guger & Wood are erecting a large water wheel, for the purpose of prospecting the gulch, which has as yet never been done. Should they be able to reach be l-rock, a new era in gulch mining will open on Grasshopper, highly beneficial to this community. Passing several mills and smelting works we soon found ourselves in the little hamlet of Marysville, consisting of but one short, wide street, occupied by miners and their families. On arrival we were joined by Mr. R. S. Kirby, of the Montana Mineral Land and Mining company, and the superintendent for the company, Captain Thomas Trathaway. The Mademoiselle lode was the first visited. A tunnel, or level, seven by five feet, is now being driven towards the ledge, approaching from the south, and had attained a length, at the day of my visit, of six hundred and fifty feet, two hundred feet from the entrance, which is twenty-eight above the level of the creek, affording plenty of room for dump. Side drifts diverge from several points, which were driven with a view of taking out rich gravel. The whole length of the level, at a point where it will intersect the Mademoiselle, will be one thousand one hundred and fifty feet, and will strike the ledge at a depth of one hundred and eighty-two feet below the surface, and one hundred and fifty-six feet below what is known as the Mademoiselle tunnel, seven by five feet, which starts seventy feet south of the discovery and follows the ledge between solid rock for two hundred and twenty-five feet, on a level. On the lower level, four hundred and eighty-three feet north from the entrance, a ledge was struck, and without stopping the work on the tunnel, this ledge (the Bangs) was developed by first sinking a hoisting shaft eighty-five feet deep, to a level with the tunnel, and continuing it down. It is now below the level of the creek, and forty-five feet below the tunnel, and work is still going on. They have struck talco slate in this lower shaft, a sure indication of rich mineral. But one wall-rock only has been found, and nothing can be said of the width of the Bangs crevice, although the shaft is seven by nine feet. The ore is a sulphurate, the peculiarity being its containing thirty per cent. of silver to seventy of gold, assaying on an average $210 70. No machinery being on hand to reduce these ores, a large pile is accumulating, awaiting the erection of proper mills, which are now on the way to this country. Fourteen men have been employed during the past season in these works. Retracing our steps from the level to the open air, we next ascended the gently sloping hills, and approached the first, largest and richest ledge of Montana, the Dacotah. As the visitor runs his eye over the course of this ledge, huge masses of burnt, decomposed quartz arize, as if squeezed by a mighty force from the earth, over half a mile of gently rolling hills. The croppings being so prominent and containing a goodly share of free gold, it is not to be wondered at that the Dacotah was the second quartz lode discovered, or better said, found in the Territory. (The Yorkshire was the first discovered and recorded.) The discovery of the Dacotah is located one mile east of Bannack, and one-third of a mile north of Grasshopper creek, showing an opening, without timber, six by nine feet and ninety feet deep, with crystalline pyrites on the bottom. Eighty-three thousand dollars was taken from this shaft before the M. M. L. & M. Co. came in possession. The ledge runs east and west. No work east of the discovery has been done beyond trying to find the ledge, which has not yet been done, and it is supposed that the ledge here takes a southerly direction and forms the Mademoiselle. No. 1 has a shaft, lying idle now, one hundred and twenty feet deep, owned by the same company. No. 2 has two shafts on the ledge, respectively twenty and thirty feet deep, showing yellow sulphuret of copper, and presenting a beautiful appearance, owned by the same company, but not being worked at present. No. 3 has no work on it beyond a cayote hole. No. 4, owned by the company, has furnished but half a dozen tons of rich paying ore. No. 5, with a shaft forty-five feet deep and ten to twelve feet wide, is sunk on an immense deposit of decomposed quartz, similar to the Whitlatch Union No. 3, and has given fine returns in the mills, owned by Kiskadden & Co. On No. 5 Mr. Samuel Batchelder, superintendent of the Butterfield Mining company, awaited us and assumed the office of cicerone for the party. Entering the tunnel, which is six by seven feet, driven through the hardest of granite, three hundred and ninety-eight feet deep, we could not but wonder at the immense amount of work done since the 4th of November of last year, the whole of this level being driven since that time. From the point the level now strikes the ledge, we ascended an incline (three hundred feet northerly) supplied with the most substantial ladders for sixty-nine feet; thence sixty-two feet in a southerly direction, and thence verging into a straight shaft forty-two feet deep to the surface, being one hundred and thirty feet in a straight line to the main level. The second section runs down into a large and well-paying body of ore, which will be tapped from the level. Nine hundred and forty feet of tunnelling and shafting has been done since the the time specified, with only eleven hands, and Mr. B. informed us that not a single day had been lost, every opening of the mine being well housed up. No. 7 on the Dacotah is not being worked now, and has an old shaft sixty-five feet deep. No. 8 displays an opening nearly one hundred feet deep. In this claim, at a depth of seventy feet, a remarkable cave, or rather a number of them, have been found—the large dome-like roof, pendant with stalactites, and the floor displaying the most fantastic formations of stalagmites. At present these caves are not accessible, but Mr. Kirby informs us that he will open an entrance to them soon, and I may be enabled to give you a better description of them on my next visit to Bannack. Nos. 9, 10, and 11 are merely prospected, and No. 12 has a well and substantially-timbered shaft, six by eight feet, one hundred and twenty-nine feet deep, worked by Messrs. N. E. Wood and Guyer, for the New York Gold and Silver Mining company. Some very good rock has come from this shaft, but owing to the inefficient machinery, has not as yet paid dividends. From No. 13 the Dacotah is staked, probably fifteen miles, on an imaginary line, but nothing further has been done. Should any enterprising prospector strike a ledge on the supposed course of this father of ledges, within ten miles, he will not enjoy the benefits of it—some one will claim the same under the old Idaho laws. Leaving the mines for a time, we now go on a visit to the mills. The Butterfield Smelting Furnace Works are lying idle now, from a defect in the cupola, which, however, will soon be remedied, and start up again on Blue Wing ores, from which handsome results were had, and samples of which are to be seen at the works. Butterfield's twelve-stamp mill is the next up the creek. It has no other gold-saving apparatus besidea plates and blankets, and lies idle now, but as soon as additional amalgamators arrive, twelve more new stamps will be added, and the mill will start up on Dacotah No. 6. Huge piles of ore are awaiting to be crusned. The M. M. L. & M. Co's mill is, like the rest of this company's property, a pattern of neatness and symmetry, containing twenty stamps, with house room for twenty more. One fifty horse power engine, a model of beauty, drives the machinery to crush the pyrites from the Madamoiselle lode; but owing to the peculiarity of the ore, saves but twenty per cent. of the gold, which deficiency, however, will soon be filled by machinery adapted to the ore. The N. J. G. & S. Mining Co.'s mill is but another warning to Eastern capitalists investing in mines. The complicated machinery now lies idle, the former worn out, and the latter in the same fix, will contribute largely to Mr. Hendrie's foundry in old iron. Let capitalists who invest first find what ore they have to work, and then adapt their machinery to it. During the afternoon I paid a visit to the St. Paul lode, and found it one of the best defined ledges in the district with easy working quartz, having yielded forty dollars per ton on an average.

Nevada.

Silver Bend.—The *Reporter*, May 11, says: All of the bullion shipped from the Silver Bend section, is at present produced by the little mill of the Belmont Mining company, from ore taken from the Transylvania ledge. Work is continued upon the Highbridge ledge, but no ore from it has been reduced for the past month. The ore with which the mill is supplied is quarried from the Transylvania ledge, on the location known as the Wood & Buel, or Gilleland ground. The ledge has here for a long distance been laid bare, rendering it an easy matter to obtain a sufficient quantity of ore to supply the mill. It is taken to the batteries as it comes from the ledge, the only assorting that is required being merely to throw out the pieces of slate that sometimes adhere to the quartz. It stands faultless and unbroken for a greater distance than any vein we have ever before observed. Its width is perhaps eight or ten feet, and the most conclusive state-

ment we can make as to its richness, will be to give the result of the working of the ore for the month of April. Three hundred and thirty tons of ore reduced, yielded in bullion $17,000. It was crushed wet, and but about sixty-five per cent. of the assayed value of the pulp saved—the remainder running off with the tailings, to be re-worked at some future time..... Work will shortly be resumed upon the McDonald claim, in Ophir Canyon. The McDonald company own the first southern extension of the Murphy ledge and already have a shaft sunk to a considerable depth upon it, but a few yards distant from the opening upon the original Murphy mine. Mr. John H. Boalt, is the General Agent of the company.....A small vein of exceedingly rich ore was discovered a few days since by A. W. Simonson. It is situated a little northwest of the Arizona and within a short distance of that mine. Specimens exhibited to us from it show a plentiful amount of horn silver. A shaft has been commenced that is now down about four feet. The width of the vein is about fourteen inches. It has been stripped along the surface for about three hundred feet and found to maintain a uniformity of width throughout, while the ore is of equal richness..... Work upon the mines of the Combination company has been temporarily suspended, in consequence of water having been struck, of which there are no adequate facilities at present to free the mines. The shaft in the south tunnel is where the water is troublesome. The body of ore is here fully twenty feet thick and rich to a degree almost beyond belief. Work is still continued in other branches, and preparations are making for the erection of the monster reduction works .....Work has been resumed upon the shaft of the Quintera Mining company. This shaft is now down over thirty-five feet, and will strike the ledge at a depth of one hundred and fifty feet.....We hear that Harrison & Co., have sold the Achilles ground, near the Transylvania, for the sum of $30,000, but cannot vouch for the truth of the rumor.

San Antonio.—Parties just arrived from San Antonio inform us that from thirteen to sixteen men are constantly employed by Mr. George Seitz upon the Liberty mine. The incline is now down upon the ledge to the depth of two hundred and seventy-five feet, and considerable quantities of fine ore extracted. This is worked at the Rigby mill and yields from $250 to $300 per ton.—*Ib.*

Northumberland.—From Mr. W. N. Cummings, Recorder of this district, we learn that a large and fine appearing ledge was recently discovered there. It is situated about three miles to the northward of Thrift's camp, upon the west side of the mountain overlooking Smoky Valley. It is about nine feet thick, and the quality of the ore splendid.—*Ib.*

Morey.—At this district, situated about fifteen miles north of the mouth of Hot Creek, a company has quietly been at work for several months, developing their mines. There are several fine veins in the district, which bear great similarity to those of the Reese River district in the vicinity of Austin, being in granite. Upon one of them a depth of one hundred and sixty feet has been sunk, just reaching the water level. This vein is about four feet wide, and a quantity of the ore taken from it, and worked at one of the Austin mills yielded $300 per ton.

Reveille.—W. G. Blakeley's mill is reported by Mr. Brobant, who recently visited it, to be a success. The mill crushes the ore wet, and is capable of reducing six tons daily, but the five stamp battery can crush eight tons in twenty-four hours. When Mr. Brobant left the district there was a good supply of ore at the mill, and it was being constantly hauled there. The ore is of excellent quality, and yields at the rate of $100 to $300 per ton. In the opinion of Mr. Brobant, the ore at the mill will yield $20,000. The ore reduced thus far was obtained from the Mohaska, Green Mountain, and Cadet of the Rutland company, and the whole amount at the mill was procured from those ledges, and the Crescent, Mediterranean, and Atlantic of the Reveille company. The ore from the Green Mountain is pronounced to be very rich, and if closely assayed it is estimated that it would yield $800 to $1,000 per ton. Nearly all the locations in the eastern section of the district, which include those of the Reveille company, produce ore of very simple combination, which is easily manipulated and worked up to sixty-five per cent. without roasting. There are twelve or fifteen companies in the district all at work. The bulk of the locations are in the eastern section of the district, on the Mediterranean and other hills; but there is a large number on what is called South Mountain, where the fine Fisherman ledge of the Bullion company is situated. Brobant & Co. have some fifteen locations on this mountain, the principal of which are the Roanoke, Star of Nevada, Mary Malvina, Orleans, Green Gage, and Nonpareil, all of which are opened to the depth of six or eight feet, disclosing veins varying in width from three to twenty feet. The ores of South Mountain are described as generally somewhat rebellious, and more difficult to reduce. Mr. Brobant visited the mines of the pioneer Reveille company a short time before he left, and he says they "looked beautiful." There are about 150 men in the district, who are all working for different companies.—*Reveille*

California.

Nevada.—The *Transcript*, May 10, is informed that the mines at Gold Hill are again to be worked. Recent prospecting has demonstrated this fact that the claims there have only been "scratched over," and that they will yield handsomely if thoroughly worked. A company commenced operations during the past winter, being the first to do any work at the place, in the way of mining, for five years. Perry & Co., and Hazen & Co. are in full operation, and their gravel claims are yielding well. Several other companies are nearly ready to commence work, and the prospect is very flattering. It is believed that gravel claims at Gold Hill are as good as any to be found in the country. At Alpha there is considerable activity and a number of companies are at work, and the miners are "happy and content," and of course doing well. At Omega a great deal of mining is being done, and nearly all the claims are paying well. A German company near the town commenced operations upon a claim that never had paid anybody anything before, and we are informed, by undoubted authority, that they cleaned up last week nearly fifteen pounds of coarse gold. The miners of Whiskey Flat are hard at work, and their claims are averaging $8 a day to the hand. At Rocky Bar they are getting the water out of their mines preparatory to starting in. Poor Man's Creek, for a distance of between four and five miles, is being worked with good results. At Scotchman's, Jefferson and Washington creeks, no mining of any consequence has been done until this season, since 1861. The snow in this part of our country has all disappeared and the roads are in excellent condition. Our informant says there is a great scarcity of laborers, and the prospect for laboring men was never better than at this time. It is the accepted opinion of people abroad that the hydraulic mines in this country are all worked out, and we believe many here are of the same opinion, but we can assure them that there are more gravel claims being worked now than there has been in the country for several years.....Recently a rich vein was struck in the Unel quartz claim of Richards & Co., on Deer Creek. It is believed the ore will pay from $75 to $100 per ton. The tunnel of this mine is in 1,430.....At Gascon Ridge they are running tunnels, and a great deal of prospecting for quartz is going on. Wm. Arrington, in the vicinity of the Tecumseh mine, is getting out some splendid looking rock from the Daylight and Mary Jane ledges. He is making arrangements to put up a mill near these lodes.....The French company at North Bloomfield are pressing forward the work upon their main tunnel rapidly, and are are washing in two claims at the lower end of the range. The company is working twenty-two men. After a run of five weeks they took out $7,100. The company has purchased a water right, and it is the intention to bring water down for the purpose of working the claims and irrigating the ranches in the vicinity.....The English company at Badger Hill, near Cherokee, are washing on the Blue Gravel Channel. They employ twenty men, and at the last clean up averaged $5 per day to the man. .....The Russian Mine is located on Manzanita Hill, in Bridgeport township, is owned by three men, and and five hands are employed in working it. At the last clean up, after a four-weeks' run, they got $1,900, giving a dividend of $360 to each of the owners, after paying expenses.....The mines of the county are beginning to yield large returns. From a small mining camp, with not a score of inhabitants, $11,000 in dust was shipped in a single week lately.....The U. S. Grant mine, located at Carlisle, Meadow Lake district, is yielding handsomely. The mill has been recently overhauled and repaired, and after a week's run a clean up was had, and between $1,500 and $1,600 obtained.

Placer.—The Auburn *Stars and Stripes*, May 8, makes some big statements about the Green Emigrant claim. It says: In a line from northwest to northeast, for a distance of something over 800 feet, the company have prospected and discovered well-defined ledges, or spurs, of the above character and thickness, and like ledges of uniform richness and appearance, at various points in a prospect drift of twenty-five feet below the surface. At irregular intervals throughout this decomposed mass slabs and wedge-like chunks of hard quartz are found, spangled and seamed with pure gold. Between these slabs of quartz, wherever found, clay-like deposits of decomposed quartz and rotten talcose slate, from three to four inches in thickness, are found. The closest scrutiny, with the naked eye, generally fails to detect a trace of gold in this deposit, and yet it will yield an average of from $150 to $300 to be pan! In the rotten schist, small irregular deposits of which pervade the mass, coase rough gold, in bewildering plenteousness, is found. We feel perfectly safe in hazarding the opinion that there is loose matter enough in plain view which would yield, at the lowest estimate, from $25 to $150 per ton, to run a ten stamp-mill day and night for two full years, while there are streaks of rotten talcose slate, such as the soft streaks we have described, from which a yield at the rate of $50,000 per ton would only appear an extravagant estimate to those who have never seen it prospected.

Arizona.

The *Miner*, of April 20, says: After overcoming all manner of obstacles, and when, as they supposed, they were on the brink of fortune, our quartz-workers have been taken aback by the presence of sulphurets and refractory ores. We regret to state that upon this account nearly every mill in Central Arizona is now idle. There has not yet been time sufficient to try various processes recommended for the treatment of sulphurets, but we cannot doubt, ere long, some one of these will be found to meet the difficulties here encountered.....An exchange says: The average yield of gold from all parts of Arizona in the aggregate may be estimated at the present time to be from $4,000 to $5,000 a day. That of the other metals can not be easily estimated. But in the course of the present year a considerable increase in the yield of gold and of all other metals found in the Territory may be confidently predicted.....The Albuquerque *Press* says: C. E Cooley, Esq., was in town this week, and has given us some information in regard to the San Lazaro Mountain. Mr. Cooley left with us some specimens, we think the richest we ever saw. There was a piece of this rock pounded up in our presence weighing less than two ounces, which showed no gold on the surface, and yielded about fourteen cents, or at the rate of $2,000 per ton. Mr. Cooley reports that Manuel Ysidri is running three arastas, which are yielding fully as well as the most sanguine expected .....The Indians are still committing depredations in that country.....Late advices report that a war of extermination has commenced against the Indians, who have been unusually active and hostile in all parts of the interior. General Gregg had inaugurated a vigorous campaign, and was about to issue an order declaring Indians outside the reservation, except the Mojaves and Chemahuens, hostile. An expedition to the Block Mountains had met several bands, and killed 54 and wounded many more, and also destroyed a large amount of provisions and stores. Detachments of troops had been sent out in all directions, and the slaughter had commenced in earnest. Re-enforcements of soldiers were needed.

Colorado.

Among the more recent transactions in mining property, as recorded in our County Office, we note the following: Deed from James Eastman and wife to Andrew McKinney & Willard D. Wheeler, Boston, sundry claims in Gilpin and Clear Creek counties, for $6,000. Deed from Augustus Z. Huggins and wife, to the Pavonia G. M. Co., of New York, sundry mining claims, consideration $7.000. Samuel Harsh, et. al., deed to Marcus Walker and Chas. L. Cornish, of New York, 800 feet on the Mountain Lode, Illinois Central District, and 400 feet on the Cross Lode, said District, for the sum of thirty-five thousand dollars ($35,000.) Samuel Harsh, et. al., deed to above named party, certain claims on the Stubb and Eckle lodes, in said district, and all in this, Gilpin couaty, for the sum of thirty-five thousand dollars. Said granters deed, to said grantees, claim 1 east on the Stubb Lode, Ills. Central District, for $10,000.....By all accounts, the gulch and lode mines of Summit and Park counties, south of us, are to be thoroughly tested this summer and fall.....The *Gazette's* Georgetown correspondence says: There has been a project on foot to organize a tunnel company to drive a tunnel into Columbian Mountain expecting to find something rich. The celebrated Nuckolls and Mexican lodes are on the mountain. The stock (100 shares, representing $1,000 each) is nearly all taken. The company expect to be fully organized and at work in a week.....The Central City *Register*, May 2, says: The following are the gold shipments for the week ending yesterday:

Rocky Mountain National Bank	$7,000
Geo. T. Clark & Co	6.500
Warren Hussey & Co	3,500
Outside lots	7,000
Total	$24,000

The values are in currency.....More Indian outrages are recorded not far distant from Denver. Several stations were burned, and stock run off..... Mining operations on Clear Creek are exceedingly dull. From Grass Valley to Fall River there is no work of any consequence being done. The high water has prevented much mining which was to have been begun before this date.....The Denver *News*, May 23, says: Miners are getting $2 50 to $3 per day in the mountains, so we are informed. The excuse for not working a mine on account of the high price of labor is no longer a good one.

COPPER.

Michigan.

From the Ontanago *Miner*, May 18, we clip the following: At Evergreen Bluff the important work of opening the deep adit level before warm weather, is progressing favorably, and will, if the levels meet well, be connected this month, as they have not more than 20 to 25 feet to drift. The entire length of this level when completed will be about 1,200 feet, a large portion of the backs over which are still standing. If the stopes recently commenced over this level, west of No. 3 shaft, are an indication of what those backs will produce, there is a wealth of mineral in store for the company seldom excelled in this country. The main stope following the level exposes a face of small masses and heavy barrel work that does one good to

look upon these troublesous times. Several small masses, one over half a ton, were thrown down last week, and an equally good show for the present week was then in sight. Other portions of the mine are looking as well as usual. They have 51 barrels of stamp and barrel work in the copper house, besides 19 masses, the largest of which weighs 3,590 pounds. .....At Caledonia, the most promising new feature under ground is the intersection of the North vein by No. 4 cross-cut level. This was accomplished a week since, and it exposes a vein filled with small sheets and rich barrel and stamp mineral—a show equal to any heretofore obtained at a similar point on the upper levels. The timbering over the old western adit on the Champion lode being completed, they will now remove the copper exposed there some months since, in which operations we anticipate some massive exhibitions. The products of the mine weighed up on the 1st inst., were as follows :

Mass and barrel work	18,006
Stamps mineral	18,317
	36,323

or 18 tons 323-2000.....At Rockland, the remarkable occurrence of copper through which the south side adit to this mine is now passing, is attracting much attention in the district, and deservedly so, as it is one of the widest known belts of mineral bearing ground in the country. The character of the rock through which they have been passing the past two months, is that known in this district as the "calico belt," derived from the streaks of red rock running through it. Almost every foot of this ground has mineral in it—mostly stamp work in paying quantities, though the past two weeks driving has been through heavy barrel work, lumps of five, fifty, and as high as 150 pounds weight. This occurrence is the more striking by reason of its position. South of the very prolific lode on which they are sinking there are two lines of very distinctly marked "ancient pits," and the present extension of the adit is by measurement, perpendicularly under the most southern of these lines of pits. They are now within say 16 to 20 feet, judging by the inclination of the rock, from where strong copper ground was to be expected. Should it occur as anticipated, it will prove that the little bluff on which they are mining is about one half copper ground, and they might as well prepare to remove it by a side hill stope or open cut, as the Iron Mountains are mined.

The Portage Lake *Mining Gazette*, May 3d, reports the product of the Hancock mine for the month of May, stamp, 64,976 lbs.; kilns, 17,960; total, 82,936 lbs., or 41 tons 936 lbs .....At Copper Falls heavy copper was met with in extending the north end of the seventh level last week. The winze from the sixth level, that was started down some distance north of the main shoot, met it at the depth of thirty feet, and has been stopped from inability to get down farther. The vein opens out suddenly, and is filled with heavy copper from wall to wall.....At the Delaware, on Friday last, a party of men were set at work to remove a block of ground which was considered too poor to pay for stoping, but was in the way for the prosecution of other work. In breaking it away a mass of copper was met with, which, when got out and brought to surface, weighed five thousand and fifteen pounds.....The same journal, May 23, says: The product of the Phœnix mine for the past two months was as follows :

March	20 tons,	933 lbs.
April	23 "	1997 "

Most of this product is from the West vein, the main shoot in which is represented as very rich, but the stoping ground is likely to give out after this month's product is made. Several small masses got out in April are not weighed yet, but are kept back to help out some short month's product.....The product of the Cliff mine for the month of April was 100 tons, 451 lbs. Cost sheet $16,000, exclusive of stull timber, etc.....The Copper Falls Product for the month of April was 90 tons, 514 lbs. Cost sheet, total, a little over $16,000.....The Bay State product for the month of April was 18 tons, 367 lbs. The cost sheet, exclusive of supplies, was, in round numbers, $7,000; supplies a little over $2,000; total, $9,000.....The St. Clair, April product, was about six and a half tons .....The Red Jacket is the name of a new organization who propose, we believe, to commence operations on lands west of, but contiguous to, those of the Calumet, Hecla, Ossipee and Schoolcraft. .....Work has been stopped on the South Side mine on Thursday last.....The Ontonagon *Miner*, May 25, says: The April product of the National mine was 32 tons, 980 pounds, the larger portion of which was stamps mineral .....The Champion lode at the Mass mine is again showing heavy copper in the level east from the adit.....Explorations made since the first of May for the Nonesuch formation southwest from the point where it was first opened, proves that it extends three-fourths of a mile on this property, up the stream. Some half a dozen places were opened on it in that distance, and wherever the rock was found the vein is well defined and rich in fine copper. At one place where the vein is crossed by the stream the party put in a number of blasts, each one of which threw out the richest of stamps mineral.

LEAD.

Missouri.

St. Louis, Mo., June 10th, 1867.

Editors Journal of Mining :

Gentlemen—My letters are only occasional, but whenever I have the leisure I feel impelled to write, because, as an ardent lover of Missouri, I am anxious that all who seek either an investment or a home should know what immense undeveloped wealth lies here awaiting appreciation and enterprise. As a striking example of the harvest which intelligent and systematic mining is sure to reap in this noble State, I may instance the St. Joseph Lead Company, which commenced operations here in 1863. Having for the past year heard much of the remarkable deposits of galena on their property, I determined to gratify my excited curiosity by a personal observation. Leaving the Iron Mountain Railroad at Mineral Point, a pleasant drive of twelve miles over a ridge road brought me to their mines, which comprise over nine hundred acres of land in St. François county, and are distant from St. Louis about sixty miles. They are situated on an old Spanish grant and have been worked for nearly one hundred years, being among the first discovered in the State. The whole tract is underlaid by the third magnesian limestone. Galena appears over a large extent of surface as bonne terre, which is a yellow ferruginous clay, resting on the limestone and containing fragments of ore in such quantities that fifteen pounds of mineral can be washed from a cart load of the earth. A man and a boy can wash from forty to sixty cart loads per day. As this deposit is from six inches to six feet in depth and has been proved by prospecting to cover an area of over one hundred acres, it will be seen that this feature of the property is of no inconsiderable value. The old French proprietor had a dam built across a ravine and by means of the water thus collected was able for a short time after a rain to work his "diggings," but he never had the ingenuity or energy to provide a regular supply for the purpose. This the company have secured by sinking a shaft until they struck a spring of living water. Galena is also found here in the form known as "cog mineral," imbedded in clay and deposited in channels in the rock. Various openings show "float mineral" near the surface. There is another class of ore mined on this property which is so peculiar in character and wonderful in quantity that I made a visit to the mines expressly to see this phenomenon. Here galena is literally quarried. Commencing in a ravine and working into a gently rising hill, the company have already removed the surface soil and rock over a space of six or seven hundred yards in length and two hundred yards in width. As you stand facing this cut the whole hill is seen to be composed of the third magnesian limestone and broad glittering bands of galeniferous limestone stretch uninterruptedly across the perpendicular walls of rock, by their regularity and extent reminding one of beds of coal. These lead-bearing layers contain galena disseminated in crystalline forms and following the lines of stratification. The ore is steel-grained and is argentiferous, yielding on assay over $8 of silver to the ton. The deposits vary in richness. In the upper the rock predominates, while in the third the lead is so much in excess of the limestone that it has almost the appearance of pure galena. Four of these beds have been struck, but at present only three are worked. The upper varies from five to nine inches in thickness, and varies also from poor to rich. The second contains eighteen inches of mineral in a formation of twenty-two inches in thickness. The third averages nine inches, is very rich and sometimes expands to twelve inches. The fourth, only lately found and not yet worked, measures eight or nine inches where exposed. In a new opening on one extremity of the cut, I noticed a bed of this lead-bearing rock measuring three feet in thickness and overlaid by only two feet of limestone and three feet of earth. These deposits have by prospect shafts been proved to extend for a mile in width and a mile and a half in length on the property of the company. On the adjoining lands at several points mineral is found of the same character, and I have in my office similar specimens from Iron county. The work of the company on this mine has been mostly confined to these vast beds, on account of their certainty and the ease with which the ore is mined and handled. Until lately they have removed all the cap rock with the mineral; but now, to save the expense of so much dead work, they have commenced drifting, working three of these beds and taking out only eleven or twelve inches of worthless rock with the mineral. Sixty cubic fathoms have been already excavated. Until August, 1863, when this company took possession there was never a blast of gunpowder made on this property. The old proprietor used only the pick and gad, seeking mostly for bonne terre and crevice mineral, and ignoring these vast beds which he found more difficult to work with his rude appliances. The company have adopted the most complete labor saving machines, and erected the most perfect works for smelting purposes. I have never seen a mine in the State more complete in all its appointments. Over fifty buildings have been erected comprising dwellings, workshops, an office and a store. They have one Scotch hearth, one slag and three reverberatory furnaces. Forty-horse power engine drives a Blake crusher, a set of Cornish rolls, a circular screen, six double sieves, a fan for Scotch hearth and slag furnace, and two pumps, one of which pumps the mine and the other supplies the dressing floors with water. The same engine also works a steam buddle, and they propose to add a stamp-mill for reworking tailings. I was informed by the very gentlemanly superintendent that all these improvements had been paid for from the proceeds of the mine. The new reverberatory furnace has a calcining apartment over the fire, in which the ore is desulphurized before being passed into the furnace proper. By this addition they gain time and save fuel. This company are turning out eight hundred pigs per month, and anticipate doubling that amount soon. Forty men are employed at this mine, and the number might with profit be largely increased, for on this mine the question is not where to find mineral, but rather what mineral shall be worked. On this property there is lead everywhere. A shaft sunk for water disclosed mineral at a depth of twenty-six feet. In digging for the foundation of the stacks of the Scotch hearth the trenches were sunk ten feet to the solid rock and two thousand pounds of float mineral were taken out. Near by a tank for the engine was sunk seven feet and one hundred and ten pounds of ore were found. The Blake crusher has a capacity of one hundred tons, and the Cornish of forty tons per day. One man tends both. After the crushed ore is washed the sludge is put through buddles, of which they have three. Two boys tend each, and in each they dress three thousand pounds of mineral per month. Everything here is systematic and managed wtth the utmost economy of time and labor. Nothing is wasted. The establishment makes a considerable village. All the structures are neatly and substantially finished, and much ingenuity is displayed in adapting means to ends. The whole reflects great credit upon Mr. J. C. Winslow, the skillful and efficient superintendent, and upon Mr. J. Hodge, the competent engineer who has immediate charge of the mining operations. The stock, I am informed, is mainly held by New York capitalists, and the company is organized under the laws of that State. Mr. J. C. Barlow, of St. Louis, the only Western director, has given much of his time to the personal supervision of the works. Until opened by the St. Joseph Lead company these mines were so unimportant that they are not even mentioned in the report on the Geological Survey of the State, although surrounded by well-known mines. All the improvements and developments which I have described have been accomplished within four years, and in spite of the difficulties which much of the time beset the company on account of the disturbed condition of the country. It shows what Eastern enterprise can do in Missouri.

Frank H. Fletcher.

OIL.

Canada.

The Petrolia. C. W. *Valuator*, May 25, says: Very few weeks pass without a new well being struck. The last two wells struck—the Noble and the Gem—have proved themselves equal to the most sanguinary expectations; the former having produced on an average, two hundred and eighty barrels per day, since she struck, the latter about one hundred barrels per day; which adds materially to the daily production of this territory, which may now be computed at about one thousand barrels per diem, with at least one-half of the wells shut down. We venture to say that if all the wells were being pumped, the daily product would not fall far short of fifteen hundred barrels. Of course no small wells are now being pumped, on account of the low price of oil, but if it was worth, say $4 00 per barrel—a good remunerating price—we have no doubt that not only would the daily yield mentioned be sustained, but an impetus be given, the result of which would be to double the product in a very short time. There is, adds the *Valuator*, very little speculation in lands at present, and very few sales of oil, $1 25 is the selling figure per barrel.

COAL & IRON.

Pennsylvania.

The Pottsville *Standard*, of 1st, says: The amount of black-band iron ore shipped over the Mill Creek railroad for the week ending May 25, 1867, was 45 14 tons; previous, 2,876 18 tons; total, 2,922 12 tons .....At the black band workings of Jas. P. McGinnes & Co., and T. Winterstein mining is progressing satisfactorily, although somewhat interfered with by water. Such a heavy and continuous fall of rain as that which recently took place, seldom occurs in this region. We learn that at the shaft of J. P. McGinnes & Co. the thickness of the vein has increased to 33 inches.....The mining of black-band at the McGinnes shaft at Mill Creek is again impeded by the flooding caused by the heavy and continuous rain of Sunday last. Important improvements will soon be made in this shaft, by which this trouble on account of water will be avoided hereafter. The Mammoth Vein Coal company are about to lease the shaft which will be worked by the Orchard slope, by which a breast of about 300 yards will be gained, when it is estimated that from 300 to 500 tons may be mined daily, the operations having been heretofore confined to the crop.

MARKET REVIEW.

FRIDAY EVENING.

Gold and Silver Stocks.—At first board Consolidated Gregory sold, b 3, at $5 85; Corydon, $1 38@1 40; La Crosse, $1 05; Rocky Mountain, 60@70c. After call Ohio & Colorado sold at $1 15. At second call Holman sold at 14c; Smith & Parmelee, s.5, at $4 10.

	June 7.		June 14.	
	Offered.	Asked.	Offered.	Asked.
Alameda	....	9 00	1 00	9 00
American Flag	75	85	65	80
Atlantic and Pacific	1 10	3 00	1 10	2 50
Bates & Baxter Gold	75	1 50	60	1 00
Benton Gold	80	95	75	....
Bobtail Gold	2 00	3 00	1 50	3 00
Boscobel Silver	....	....	....	....
Bullion Consolidated	....	1 00	....	90
Burroughs Gold	....	....	....	....
Central Gold	....	....	....	....
Cozzier Gold	....	....	....	....
Columbian G. & S.	60	65	50	....
Consolidated Colorado	....	10	....	....
Consolidated Gregory	6 50	6 65	5 80	5 95
Corydon	1 55	1 60	1 37	1 40
Des Moines Gold	....	....	....	....
Downieville Gold	....	10	....	....
Eagle	....	....	....	....
Gilpin Gold	....	....	....	....
Gold Hill	....	4 00	....	4 00
Gunnell Gold	2 50	....	2 40	2 50
Gunnell Union	10	....	....	25
Grass Valley	....	....	....	....
Holman	14	15	12	14
Hope Gold	....	50	....	35
Keystone Silver	....	....	....	....
Kipp & Buril Gold	....	60	30	60
La Crosse Gold	1 35	1 40	1 05	1 08
Liebig	....	60	....	....
Liberty Gold	....	7	....	5
Manhattan	....	....	50 00	....
Midas	....	....	2 10	2 50
Montana Gold	....	50	15	20
New York	70	90	....	1 00
Nye Gold	4	7	4	6
Ohio & Colorado G. & S.	1 10	....	1 10	1 50
People's G. & S. of Cal.	50	60	....	50
Quartz Hill	1 62	1 65	1 45	1 55
Reynolds Gold	....	4	....	5
Rocky Mountain Gold	50	78	65	75
Sawyer Gold	7 50	16 00	7 65	....
Smith & Parmelee Gold	4 25	4 35	4 05	4 25
Sensenderferfier	10 25	....	10 00	....
Symonds Fork	75	1 50	....	1 00
Texas Gold	12	19	....	25
Twin River Silver	....	....	40 00	80 00
Vanesburg	70	75	....	1 00
Yellow Jacket Gold	....	....	....	10

Copper Stocks.—Rockland sold, b.60, at $8 50.

	June 7.		June 14.	
	OFFERED.	ASKED.	OFFERED.	ASKED.
Caledonia	....	10 00	....	10 00
Canada Copper	....	50	....	60
Charter Oak Copper	....	....	....	1 00
Davidson Copper	....	1 00	1 11	1 25
Hilton Copper	....	1 00	....	1 00
Rockland Copper	8 25	8 75	....	9 00

Petroleum Stocks.

	June 7.		June 14.	
	Offered.	Asked.	Offered.	Asked.
Bennehoff Run	2 50	3 00	2 75	....
Buchanan Farm	....	15	10	20
Bennehoff Mutual	....	....	20	70
Central	40	85	60	....
Clinton Oil	....	1 50	....	1 50
Cherry Run Special	....	....	3	8
Excelsior	....	15	....	15
Manhattan	....	15	....	15
N. Y. and Alleghany	....	3 50	....	4 00
Pit Hole Creek	50	75	50	75
Rynd Farm	....	20	6	15
Rathbone Oil Tract Co.	....	25	....	....
United Pet. Farms	6	15	6	15
United States	2 60	3 50	2 40	4 00
Union	1 30	3 00	1 30	2 50

Lead Stocks.—Walkill sold to-day, s.3, at 53.

Miscellaneous Stocks.—Wells, Fargo & Co., 65½@66; Merchants' Union Express, 13½; Del. & Hudson Canal, 154; Mariposa Pref., 20; Pacific M. S. S. Co., 138½@139.

Government Stocks.—Continue very active.

U. S. 6s, 1867	133	@ —
U. S. 6s, 1868, reg	132	@ —
U. S. 6s, 1868, coupon	136	@ —
U. S. 6s, 1881, reg	108⅝	@108⅞
U. S. 6s, 1881, coupon	112¼	@112⅝
U. S. 6s, 5-20s, 1862, coupon	110⅛	@110¼
U. S. 6s, 5-20s, 1864, coupon	106⅜	@106⅞
U. S. 6s, 5-20s, 1865, coupon	107	@107⅛
U. S. 6s, 5-20s, 1865, coupon, new	109⅜	@109½
U. S. 5s, 1871, reg	113	@ —
U. S. 5s, 1874, cpn	117	@118
U. S. 5s, 1875, reg	103	@ —
U. S. 5s, 1874, coupon	110	@112
U. S. 10-40 coupon	100⅛	@100¼
U. S. 7-30, August, large	106¼	@106¾
" June, large	105⅞	@106
" July, large?	105¾	@106

Foreign Exchange is strong. Bills at 60 days on London are quoted at 109¼@109¾ for commercial; 109⅞@110⅛ for bankers'; do. at short sight, 110⅜@110⅝; Paris at 60 days, 5.18¾@5.12½; do. at short sight, 5.12½@5.10; Antwerp, 5.18¾@5.12½; Swiss, 5.17½@5.12½; Hamburg, 36@36½; Amsterdam, 41@41⅛; Frankfort, 41@41½; Bremen, 79@79½; Prussian thalers, 72@72½.

Gold was 137½ at 2 P. M.

Copper.—The market has been firm, and a large business has been done. We quote at 24@24½c.

Iron.—The market for pig is quiet. American Pig, No. 1, at $40@44; No. 2, $38@40. There has been no improvement in the wholesale trade. Wm. Gothout reports as follows: Swedish Iron, $155@165; common, $92½@97½; refined, $102½@107½; hand, $135; rods, 3-16 to ¾, $107½@167½; horseshoe, $130; ovals, ⅜ to 1⅛, $130@170; nail rods, 9@10¼c. hoop, ⅝ to 2, $140@195; scroll, $135@182½.

Lead.—Quiet at 9¼@9½c.

Tin.—Quiet. We quote Straits at 24c.

Spelter.—Quiet but firm. 9¼@9½c.

Petroleum.—Is dull, and prices are lower. We quote at 9¾@10c. for crude in bulk, and 15c. for do. in bbls. Refined in bond at 24½c. for S. W., and 25½c. for P. W.

THE COAL TRADE.

NEW YORK, June 14, 1867.

A moderate city trade has been doing during the past week, in consequence of an increased activity among retail dealers, whose stocks are depleted, and whose orders are coming in from customers who lay in their winter supply at this time, prior to leaving the city. During this and next month, (always quiet months in this branch of trade,) we anticipate a light business, but no great decrease from that of 1866. Business generally is shaping to a more healthy condition, and we think that after retrenching expenses through the summer season, our manufacturers will commence in the fall with renewed vigor. Every sensible coal merchant can plainly calculate that Coal has reached its lowest figure. By consulting our rates of transportation he will perceive that the prices obtained at the present time barely cover expenses. A further decline would put a stop to all mining operations, and consequently enhance the price. As it is, August will no doubt usher in a higher rate of prices, and dealers who calculate upon a profitable trade this fall will do well to replenish their stocks now. The Coal Trade reports, as published in the JOURNAL OF MINING, are in every respect reliable, and out of town dealers will find that the prices current as reported can be depended upon. We call especial attention to our list of special coals.

The amount of Coal shipped over the Philadelphia & Reading Railroad last week, ending June 13, 1867, was 78,533 tons; total for season, 1,405,811. By Schuylkill Canal, 36,284 tons; total for season, 327,916 tons.

The following is the quantity of Coal shipped over the principal roads for the week ending June 8, 1867.

	1866.		1867.		
	WEEK.	TOTAL.	WEEK.	TOTAL.	DECR'SE
Phil. & Reading R.R.	80,455	1,545,488	74,697	1,327,278	218,210
Schuylkill Canal	40,171	439,858	28,289	290,732	149,126
Lehigh Val. R. R.	38,221	763,185	52,511	810,069	46,884
Lehigh Canal	33,322	254,039	33,912	195,618	.....
Del & Hudson	46,320	379,390	38,130	373,563	7,827
Scranton North	9,576	168,221	7,915	161,559	6,662
Scranton South	22,081	431,966	26,358	547,408	115,442
Penn'a. Coal Co. Rail	.....	99,593	19,715	299,847	200,254
" " Canal	353	5,863	358	5,277	586
Wyoming North	.....	.....	.....	.....	.....
Wyoming South	.....	86,891	2,422	27,623	.....
Shamokin	14,883	197,726	12,390	172,483	25,244
Trevorton	.....	.....	2,124	15,712	59,268
Short Mountain	3,704	27,384	3,002	16,809	10,574
L. V. Co	2,782	20,106	2,782	20,629	524
Broad Top	.....	116,287	4,678	101,514	14,773
Williamsto'n	1,587	7,092	3,546	29,732	22,640
Total	263,455	4,543,149	312,929	4,395,551	.....
1867	.....	.....	.....	4,543,194	.....
Decrease	.....	.....	.....	147,341	.....

Schuylkill Coal Trade.

BY RAILROAD & CANAL, FOR WEEK ENDING JUNE 13, 1867.

	Railroad.	Canal.
St. Clair	31,438	.....
Port Carbon	7,819	.....
Pottsville	626	.....
Schuylkill Haven	24,230	.....
Auburn	3 391	.....
Port Clinton	11,029	.....
Total for week	78,533	36,284
Previously this year	1,327,278	290,732
Total	1,405,811	327,016

Lehigh Coal Trade.

SHIPPED FOR THE WEEK ENDING JUNE 8, 1867.

SHIPPERS.	CANAL. Week. Tons.	CANAL. Total. Tons.	RAILROAD. Week. Tons.	RAILROAD. Total Tons.
FROM MAUCH CHUNK.				
Lehigh Coal & Navigation Co.	.....	.....	.....	.....
Summit Mines	13,557	59,185	.....	.....
Room Run Mines	221	1,313	.....	.....
Other Shippers	.....	.....	.....	.....
Total	13,578	60,498	.....	.....
FROM B. M. REGION.				
John Connery	.....	.....	43	1,487
W. T. Carter & Co. (Coleraine)	181	524	2,065	39,015
Spring Mountain Coal Co	....	381	4,301	55,526
Thomas Hull & Co. (N. Y. & Lehigh Co)	542	2,266	2,953	42,420
Honey Brook Coal Co	2,308	5 946	3,967	58,608
German Pennsylvania Coal Co	483	2,640	1,107	15,872
Beaver Meadow (D. W.)	....	....	61	464
Other Shippers	....	....	....	53
Total	3,515	11,759	14,500	213,448
FROM MAHANOY REGION.				
McNeal Coal and Iron Co	377	1,116	2,488	42,535
Knickerbocker Anthr. Coal Co.	149	878	1,054	25,129
North Mahany Mines (Mahanoy Col. now B. & C.	89	414	805	9,142
Delano do	....	182	59	26,856
Primrose Mines (Rathbun, Stearns & Co.)	....	....	1,127	29,416
Walter, Brothers & Co. (now Bedford & Cox)	....	82	....	....
Mount Etna Coal Co	....	....	....	58
Trenton Coal Co	....	90	20	895
Glendon Coal Co. (Glendon Colliery)	....	....	51	10,365
Thomas Coal Co	97	288	937	10,886
Williams & Herring	....	95	306	6.455
E. S. Silliman	....	....	2,039	48,191
East Boston	....	....	....	505
New Boston Coal Co	....	....	286	4,525
Shamokin Coal Co	....	....	431	431
Other Shippers	....	....	05	95
Total	713	3,148	9,650	206,279
FROM HAZLETON REGION.				
A. Pardee & Co. (Hazleton)	2 597	17,346	4,535	40,555
G. B. Markle & Co. (Jeddo)	1,082	12,321	4,351	41,823
Wm. S. Halsey & Co. (Mt. Pleasant)	63	1,028	454	1.674
Buck Mountain Coal Co	1,443	12,837	1,936	16,814
Sharpe, Weiss & Co. (Council Ridge)	859	7,896	2,686	28,927
Coxe, Brothers & Co. (Cross Creek)	441	2,186	518	6,711
Ebervale Coal Co	1,082	8,478	1,247	18 791
Stout Coal Co	820	5.761	658	10.125
Harleigh Coal Co	563	3.308	1,580	10,482
Ashburton Coal Co	....	....	....	37
East Sugar Loaf	....	...	4,021	38,799
Woodside	....	....	....	....
Highland	285	532	967	2,680
Mount Hall	88	88	....	284
Other Shippers	....	....	....	10
Total	9,329	70,786	22,959	217,729
FROM WYOMING REGION.				
Newport Coal Co	471	2,243	.....	606
Warrior Run Mining Co	186	1,629	145	4,979
Parish & Thomas	274	1,343	509	19,788
New Jersey Coal Co	127	1,580	345	8.607
Lehigh & Susquehanna Coal Co.	284	1,886	347	10,743
Germania Coal Co	580	2,142	259	8,279
Franklin Coal Co	465	1,178	39	7,721
Auden'ried Imprv't & Coal Co	377	1,811	304	33,815
Wilkes-Barre Coal and Iron Co.	2,369	18,421	812	37,638
Baltimore Coal Co	439	4,574	473	23,325
Union Coal Co	92	3,502	....	6.964
Wyoming Coal & Transp'n Co.	159	3,119	283	13,136
Everhart Coal Co	92	988	171	1,533
Morris & Essex Mutual	....	...	343	3,874
H. B. Hillman & Co	....	....	177	5.956
Bowkley, Price & Co	....	....	....	1,745
T. F. Hunt & Co	....	....	....	774
U. Lehigh Coal Co	637	2,137	1,187	13.121
Other Shippers	4,181	2 546	....	....
Total	6,774	49.425	5,400	172,612
Grand Total	33 912	195.618	52,510	810,069
Corresponding time 1866.	33,322	254,039	38,220	763,185
Increase	589	.....	14,290	36,884
Decrease	....	58.421	....	....

RECAPITULATION.

RAILROAD.

	Forwarded East by Rail from Mauch Chunk.	Delivered at M. Chunk, and on line of road abt that point	Total by Rail.	Delivered at B. M. Junction and Mauch Chunk for Canal.	Delivered at B. M. Junction for Rail.	Total by Rail road and Canal
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
For the week	52,510	8,345	60,856	3,936	64,792	
Cor. w'k last year	38 220	88	38 308	10,930	49.240	
Prev'usly this y'r	757,558	441	758 000	12,515	770,516	
Total	810,069	8,787	818.857	16.451	835,308	
Same time last y'r	763,185	483	763,669	72,579	836 248	
Increase	46,884	8,303	55,187	...	....	
Decrease	....	....	....	56,127	939	

CANAL.

	Week.	Season.
Total from Mauch Chunk	13,578	60,498
" B. M. Region	3.515	11.759
" From Mahanoy Region	713	3.148
" Hazleton Region	9.329	70,786
" Wyoming Region	6.971	49.425
Total	33,912	195,618
Same time last year	33,322	254,039
Increase	589	.....
Decrease	.....	58,420

Lehigh and Mahanoy Coal Trade,

For week ending June 8, 1867.

NAMES OF SHIPPERS.	WEEK.	TOTAL.
Trenton Coal Co	20 16	988 01
Mount Etna	.....	43 04
Mahanoy Coal Co	803 06	9.226 12
Delano Colliery	59 03	27.066 00
Glendon Coal Co	51 17	10,288 17
Rathburn, Stearns & Co	1,127 00	20.219 19
E. S. Silliman	2,142 18	48,583 12
McNeal Coal & Iron Co	2,873 11	43 482 00
Knickerbocker Coal Co	1,054 05	26.059 10
Thomas Coal Co	976 11	10.954 01
Williams & Herring	306 19	6,534 19
Shamokin Valley Coal Co	431 07	431 07
New Boston	286 03	4,525 19
Other shippers	5 09	15 11
Total	10.141 11	208,426 12
Corresponding week last year	8,288 17	141,254 08
Increase	1,852 94	67,172 04
Decrease	.....	.....

Cumberland Coal Trade.

For the week ending June 12, 1867.

(From the Alleganian.)

TRADE ON THE CANAL.—There were despatched from the port of Cumberland, during the last week, 143 boats, laden with 15 379 13 tons of coal, forwarded by the following companies:

	Tons.
American Coal Co	4.458 02
Borden	1,788 10
Central	2,951 13
Hampshire	991 19
Cumberland Coal and I. Co	2.900 10
Consolidation	2.588 19
Total	15.379 13

COAL TRADE BY RAILROAD.—Statement of Coal shipments over the Baltimore and Ohio Railroad for the week ending June 8, 1867:

From C. and P. R. R.	Tons.
Consolidation	358 03
American Company	871 17
Borden	763 12
From Eckart R. R.	
C. C. and I. C	406 10
Spruce Hill	155 08
Blaen Avon	257 04
Total	2,712 14

No report from George's Creek Mines.

Gas Coal	Tons.
From mines West of Piedmont	2,280 00

Coal transported over the Cumberland & Pennsylvania Railroad during the week ending June 1st, and for the year:

	To Canal.	To. B. & O. R.
For week	5,104 09	14,465 00
For year	85,241 07	2 26 283 10

During the corresponding period of 1866, there were delivered to the Baltimore & Ohio 183,037 09 tons, and to the canal 61,260 tons 14 cwt.

Prices of Coal by the Cargo.

[CORRECLED WEEKLY.]

At New York, June 14 1867.

Schuylkill Red Ash, choice	$6 00@	$6 25
" Ordinary	5 50	6 00
" White Ash Lump	5 50	5 75
" Steamboat	5 50	5 75
" Broken	5 50	5 75
" Egg	5 50	5 75
" Stove	5 50	5 75
" Chestnut	4 50	4 75
Lehigh White Ash Lump	5 75	....
" Broken	5 50	....
" Egg	5 50	....
" Stove	5 75	....
" Chestnut	5 00	....
Wilkesbarre Lump	5 25	....
" Broken & Egg	5 50	....
" Stove	5 75	....
" Chestnut	5 25	....
Wyoming Lump	5 00	....
" Steamboat	5 25	....
" Stove	5 50	....
" Chestnut	4 75	....

SPECIAL COALS.

Diamond Vein Red Ash, Schuylkill	6 25	....
Locust Dale White Ash, "	5 75	....
Honey Brook " " Lehigh	5 75	....
Sugar Loaf " " "	5 75	....
Room Run " " "	5 75	....
Harleigh " " "	5 75	....
Spring Mountain " "	5 75	....
Sugar Creek " "	5 75	....
Silver Brook, Schuylkill	5 75	....
Fulton White Ash	5 75	....
Stout	5 75	....
Buck Ridge " " Shamokin	6 00	....
Spohn & Lewis	6 50	....
Shenandoah	5 50	....
Swatara Falls, Red Ash	5 75	....
Henry Heils, E. Franklin, Lorberry	6 00	....
New England Red Ash	5 75	....
Broad Mountain	5 50	....
Wyoming	5 40	....
McNeal Co.	5 75	....
George's Creek (Belt.)	5 25	....
" " (Georgetown)	5 00	....
Locust Mountain (Roppher)	5 75	....
Duncan Red Ash	6 50	....
Wilkesbarre Coal & Iron Co.	5 50	....
New Burgh Orrell Gas Coal	9 50	....
Despard Gas Coal	9 50	....

Agents for these Coals may be found in our advertising columns.

At Philadelphia, June 14, 1867.

Lehigh Lump and Steamboat	$5 25@	5 50
" Broken and Egg	5 25	5 50
" Stove	5 25	5 50
" Chestnut	4 25	....
Schuylkill Red Ash Prepared	4 75	5 00
" Chestnut	3 50	....
" White Ash Lump and Steamboat	4 25	....
" Broken	4 25	....
" Egg and Stove	4 25	4 50
" Chestnut	3 50	3 75
Locust Mt. Lump, and Steamboat	4 25	....
" Broken	4 25	....
" Prepared	4 25	....
" Chestnut	3 75	....
Lorberry Coal	4 50	..
Shamokin	5 00	....
Franklin, (Lykens Valley)	5 00	....
Broad Top	5 00	5 25

Scranton Coal at Elizabethport, June 13, 1867.

Lump	$5 00@	— —
Steamer	5 00	— —
Grate	5 00	— —
Egg	4 75	— —
Stove	5 50	— —
Chestnut	4 50	— —

Prices for Pittston Coal at Newburgh, June 13, 1867.

Lump, per ton of 2240 lbs	$5 05	....
Steamer, " " "	5 15	....
Grate " " "	5 15	....
Egg " " "	5 15	....
Stove " "	5 30	....
Chestnut "	4 25	....

70 cents additional to New York.

Lackawanna at Rondout, June 13, 1867.

(Average contract prices for year.)

Lump	5 00	@....
Steamer	5 10	@....
Grate	5 30	@....
Egg	5 40	@....
Stove	5 55	@....
Chestnut	4 60	@....
Pea	4 00	@....

Lehigh Coal at Elizabethport, June 13, 1867.

Lump	5 75@	....
Steamboat and Broken	5 50	— —
Egg	5 50	— —
Chestnut	5 00	— —
Stove	5 75	— —

At Baltimore, June 12, 1867.

Wilkesbarre & Pittston W. A	$6 25@	$6 50
Lykens Valley & Sunbury R. A	6 50	6 75
Shamokin W. or R. A	5 50	6 00

George's Creek and Cumberland Coal.

Run of mine, f. o. b, at Locust Point at Georgetown $5 00@ 5 25

Wilkesbarre Coal at Elizabethport, June 13, 1867.

Lump	5 00	....
Steamer	5 25	....
Broken	5 35	....
Egg	5 25	....
Stove	5 50	....
Chestnut	4 75	....

Prices of Provincial Coals.

Duty $1.25 per ton.

Block House (on board)	$2 00	gold
Gownie "	1 75	"
Lingan "	1 75	"
Sidney "	2 25	"
Picton "	2 25	"
Glace Bay "	1 87½	"
International Co.'s "	1 75	"
Slack Coal "	75@1 00	"

Prices of Foreign Coals.

Duty $1.25 per ton.

Liverpool Gas Caking	$10 50
" " Cannel	13 00
" House "	16 00
" " Orrel	16 00

Per ton 2240 lbs.

PRICES FROM YARD:

Liverpool Orrell, screened	18 00
" Cannel, "	20 00

per ton 2000 lbs. delivered.

Coal Freights.

(Corrected Weekly.)

From Port Richmond, Philadelphia.

Boston	2 00	— —	New London	1 85	— —
" bridges	03	— —	New Bedford	2 00	— —
Bridgeport	1 75	— —	Newport	2 00	— —
Bridgeport	1 75	— —	New Haven	1 75	— —
Bristol	1 90	— —	Newberryport	2 25	— —
Belfast	2 25	— —	Nantucket	2 25	— —
Braintree	2 75	— —	Portsmouth	2 25	2 50
Beverly	2 50	— —	Portland	2 25	— —
Bangor	2 00	— —	Providence	1 80	1 85
Charlestown	2 00	— —	Quincy	2 35	— —
Chelsea	2 25	— —	Roxbury	2 50	— —
Cambridgeport	2 50	2 75	Saco	2 50	— —
Cambridge	2 00	— —	Salem	2 00	— —
" bridges	03	— —	Salisbury	2 50	— —
Dighton	1 90	— —	Savannah	2 00	— —
Dorchester Point	2 50	— —	Washington	1 15	— —
Davenport & dis.	2 00	— —	Weymouth and tow		
East Cambridge	2 25	— —	and pilotage	2 00	— —
Fall River	1 85	— —	Wickford, R. I.	2 00	— —
Gardner	2 75	2 75	St. Jonh, N. B.	1 50	in gold
Gloucester	2 50	— —	Quebec	1 25	"
Hingham and dis	2 00	— —	Ipswich	2 50	— —
Lynn and dis	2 25	— —	Taunuston, Me	2 00	— —
Milton	2 50	— —	Bridgeford	2 50	— —
Malden	2 80	— —	Haliowell, Me	2 60	— —
Marblehead	2 00	— —	Rockland	2 50	— —
Medford	2 50	— —			
New York	1 30	— —			
Norwich & tow	2 00	— —			

From Newburgh.

River. Co.'s Boats.			Eastern.		
Albany	50@	....	Boston	1 80@	....
Barrytown	35	....	Bridgeport	1 12½	....
Catskill	35	....	Bristol	1 50	....
Cold Spring	30	....	Dighton	1 50	....
Coeymans	45	....	Fall River	1 45	....
Coxsackie	40	....	Mystic	1 30	....
Fishkill Landing	20	....	New Haven	1 12½	....
Greenbush	50	....	New London	1 30	....
Haverstraw	45	....	Newport	1 45	....
Hudson	55	....	Norwalk	1 12½	....
New York	70	....	Norwich	1 40	....
Nyack	50	....	Pawtucket	1 65	....
Peekskill	40	....	Providence	1 50	....
Poughkeepsie	25	....	Stamford	1 12½	....
Rhinebeck	30	....	Stonington	1 30	....
Saugerties	35	....	Warren	1 45	....
Sing Sing	50	....			
Stuyvesant	40	....			
Tarrytown	50	....			
Troy	55	....			
West Point	30	....			
West Troy	55	....			
Yonkers	55	....			

From Elizabethport.

Albany	$1 00@	— —	New London	1 25@	— —
Boston	1 75	1 85	Newport	1 50	— —
Bridgeport	1 00	— —	New York	55	60
Fall River	1 40	— —	Norwalk	1 00	— —
Hartford	1 50	— —	Norwich	1 30	— —
Hudson	1 00	— —	Pawtucket	1 65	— —
Lynn	—	— —	Portland	1 95	— —
Middletown	1 25	— —	Portsmouth	2 15	— —
New Bedford	1 40	— —	Providence	1 40	— —
Newburyport	2 10	— —	Salem	2 00	— —
New Haven	1 00	— —	Taunton	1 40	— —

From Baltimore.

To Philadelphia	$1 40@	1 50	Boston	2 75@	3 00
New York	2 25	— —	Sound Ports	2 75@	2 90

From Georgetown or Alexandria.

To Philadelphia	$1 50	— —	Boston	2 75	3 00
New York	2 25	— —	Sound Ports	2 75	2 90

Provincial Freights.

	Currency.
Sydney to N. Y.	$3 50
Lingan	4 00
Cow Bay	4 00
Big Glace Bay	4 25
Little "	3 50

Foreign Freights.

New Castle and Ports on Tyne	£18@ keel.
Liverpool	11s.@ 12s.

BOSTON STOCK MARKET.

(By Telegraph.)

BOSTON, June 14, 1867.

Prices bid to-day were as follows:

Canada	—	Minnesota	—
Copper Falls	23	Quincy	20
Franklin	17½	Cary Improvement	7⅝
Hancock	7	Rockland	—
Huron	37⅛	Water Power	23¾
Isle Royal	—	Contra	—

Sales at Boston Stock Exchange, June 13

10 shs Water P'r	24½	100 shs Native b.15	1⅝
10 do do	24¼	115 do do s.20	1⅝
600 do Cary Imp.	7¾	100 do do b.3	1⅝
150 do do	7⅞	50 do Rockland b 30	8⅛
100 do Waverley	1½	1000do Ophir G 1 90	
275 do Allouez M.	8¼	SECOND CALL.	
100 do do b.60	8⅜	300 do Hancock	7⅛
200 do Huncock	7⅜	200 do do b.30	7⅜
50 do Cop. Falls	24	50 do Cop. Falls	23⅜
50 do do	23⅜	100 do Water P'r	23⅞
50 do Franklin	17½	10 do Pewabic	12¼
50 do do	17¾		

FOREIGN MARKET REVIEW.

Metal Report.

LONDON, E. C., May 17, 1867.

A decided improvement has taken place in most branches of the metal trade with an increased amount of business. Holders are more confident in a further advance, and it is with difficulty that buyers get their wants supplied at the current quotations.

IRON.—The market for Welsh bars is improving, without any material variation from last week's quotations. The same remarks apply to Staffordshire qualities. Scotch pig iron, after advancing to 55s. 9d. cash, has reduced 6d. per ton.

COPPER.—An animated business was reported both in Foreign and English copper, the former taking the lead. Burra advanced to £87, with prompt; and Wallaroo £85 to £85 10s.; Chili bars, £72 10s. spot, and £73 to arrive; English manufactured, £84 to £85 best select, £81 to £82; and tough and tile, £79 to £80. Since the arrival of the Chili mail advising shipments of about 2,220 tons of pure copper in a fortnight, buyers have withdrawn, and prices fell 20s. per ton lower.

TIN.—An average amount of business has been done in Straits tin, from £85 to £85 10s. according to prompt, and a considerable quantity afloat has changed hands at £26. Banca totally neglected here; £92 the nearest value. English tin steady. The Dutch market remains at 53½ fl.

TIN-PLATES.—Fresh orders are scarce, and prices still in buyers' favor.

LEAD.—No change to report. Good soft English pig, £20.

SPELTER.—Several hundred tons of common brands, London delivery, have been done the last few days at £21 and £21 5.; and special in outports at £21. The market is much firmer now at an advance of 5s. per ton, with a good demand.

VON DADELSZEN & NORTH

Rock Tunnelling Machine at the Paris Exposition.

The first machine met with on entering is that of Captain Beaumont, R. E.; and, even were he not the chief of the English section, his invention would be entitled to be first mentioned, from its evident practical value. The principle involved in all tunnelling and mining machinery is necessarily very similar, the object being in nearly all cases to imitate the motion of the boring tool when used by the workmen in perforating the rock; but the character of the hole made, and the mode of utilizing the work done, continually varies. In Capt. Beaumont's machine the motive power used is compressed air; and it is assumed that its application will be to the removal of material which is not of commercial value; or, rather, it is assumed that the making of the tunnel, and not the getting of the material, is the chief object sought; hence Capt. Beaumont's efforts have been entirely directed to making progress in the most speedy and economic manner, and in this he has certainly every prospect of being most successful. The air may be compressed in any manner most convenient, so that it will only be necessary to refer to the boring apparatus. This consists of a series of long steel chisels of great strength, attached to, and adjustable upon, the periphery of a wheel or disc of the size of the tunnel to be driven, the disc being fastened to the end of the piston-rod, so that the whole of the chisels may be conveniently given a backward and forward motion simultaneously. As the piston-rod is continued through the back cylinder cover, the piston is at all times kept in correct position, and this back rod is made of great utility in working the machine, a pinion being made upon it which is operated upon by a screw, so that the ring of chisels has a rotary as well as a backward and forward motion. As in all compressed air-engines, the quantity of air escaping from the machine, after having done its work, is considerable, so that the ventilation could not fail to be much improved. But the great practical improvement in the invention of Capt. Beaumont, and that which is calculated to make it of immense utility, is the mode in which the rock is removed. In all similar machines previously proposed the use of gunpowder was ignored, the object sought being the pounding down of the whole face of rock to be removed. Instead of this, Captain Beaumont makes an annular hole of only 1½ inches across, leaving a core of rock in the middle of only three inches or thereabouts, less than the size of the tunnel. But as he has a strong central chisel working upon the same disc as the ring of chisels, he has a good hole wherein to place a charge of gun-cotton or other explosive to remove the core. By this means the work progresses with a speed hitherto impossible, for both the machine and the gunpowder are at all times working under the most advantageous circumstances, the machine doing no more work than is absolutely necessary, and the gun-cotton is permitted to act with the greatest force upon a comparatively small quantity of rock upon every side of it, instead of having to remove a large mass on one side only.—*Cor. London Mining Journal.*

AMERICAN

Journal of Mining.

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☞ File, weekly, your copy of the JOURNAL OF MINING.

THE PROGRESS OF THE WEST THE UNION PACIFIC RAILROAD.

The true criterion of the progress of this country is the rapidity with which we are settling the West. Daily, crowds of men, with hearts to brave all difficulty, and strong arms to oppose what was once known as impossibility, cross the great rivers into the fertile plains which lie beyond, and bear with them the ingenuity, the ability, and the courage, which characterize our race. From the far West, beyond the Rocky Mountains—a region which, not a century ago, was the *ultima Thule* of modern travellers—thousands are pressing eastwards to meet their brethren, citizens of a common country. And this colonization is not of a temporary character, such as that of the followers of that European adventurer who sought after the spring of eternal youth. With a less visionary object, and with more steadfast purpose, they leave their homes to seek a new and permanent residence in the West, where their enterprise and labor will bring them such rewards as a life-long toiling could not procure elsewhere. To the West our young men and emigrants are wisely going. Its population is yearly increasing, and with a remarkable rapidity. Estimating the population of the Western States, exclusive of Ohio, for the period from 1800 to 1820, at 280,000, it had increased before 1840 to 1,250,000, and before 1860, to 5,170,000. The line of settlement is moving further on in a manner scarcely less wonderful. In the last year of the eighteenth century, it was on the western side of the sparsely populated district of Ohio. Some sixty years later it was eight hundred miles farther west, on the borders of Iowa, having progressed at a ratio of more than thirteen miles each year. How rapidly this line of settlement will be pushed forward by the Pacific Railroad, we must be all conscious of. That line affords to the East a direct means of communication with California and the mineral terrritories of the Pacific coast. Some of its advantages to that region we have already pointed out. Were it merely to expedite the transit of merchandize, and of the hundred thousand passengers that annually pass between our Atlantic and Pacific ports, it would be of immense value. The advantages arising from it cannot, however, be confined to this. The largely increased traffic between the East and West, will naturally attract attention to the rich country lying between the chief termini of the line.

The land adjoining the Union Pacific railroad is, for the greatest portion of the route, arable, and is generally of such a nature as to induce settlement. Moreover, it is connected with our chief cities by railroad. Omaha, the principal eastern terminus, is connected with Chicago by three lines, with Burlington and Quincy by another, and with St. Joseph by a fifth. At some distance beyond Omaha a junction is formed by the Pacific railroad and the Milwaukee & Prairie du Chien line; further still a branch diverges to St. Louis, via Atchison. By these tributaries the main line will be fed from the eastern side, and will serve as the mouths through which the wealth of the West will be diffused through the East. The length of that line from Omaha to the base of the Rocky Mountains is five hundred and seventeen miles. The distance across the mountainous region will be 150 miles, and thence to California—927 miles. It is calculated that the cars will be running to this point on September 1st. This appears probable, as on Jan. 1st they had built the line 305 miles from Omaha, and are now laying rails at the rate of two miles a day. Who shall say what the advantages arising from this line will be? Were it not built for a century to come the country would continue prospering. Immigrants would hasten to our shores and seek the great West. With this line to direct the flow of inhabitants, our approach to prosperity will be fabulously great. At present, looking at the map of the country through which this line is to pass, and comparing its present uninhabited condition with what it must be—even at our present rate of progress—in twenty years to come, we fear lest the prospect which we look to, is too much magnified; we hesitate to yield to the conclusions forced upon us, lest they may be the effect of imagination, and not as they really are, the inevitable consequences drawn from a sober consideration of facts.

A WORD TO THE WISE—THE SCIENTIFIC AMERICAN vs. SENATOR SUMNER.

Senator Sumner, in his speech on the proposed purchase of Russian America, called attention to the fact that, as time is measured in that country according to the system introduced from Russia, we are, owing to different longitude, a day later in our reckoning; consequently, that our Saturday is Sunday in Russian America. Speaking of the rectification, by legislation, of this and other differences, the senator says: "Important changes must follow, of which this is typical. All else must be rectified according to the National meridian, so that within the sphere of our common country there shall be every where the same generous rule, and one prevailing harmony. Of course, the unreformed calendar received from Russia, will give place to ours: Old Style must yield to New." The *Scientific American*, evidently believes that the only difference between our calendar and that of Russian America is that day, or portion of a day, alluded to by Mr. Sumner, and fears that the "learned senator befogs himself." It states, in its issue of June 22, that—

"He appears to imagine that the beginning of the day has some connection with some meridian already established. What does he mean by a National meridian? There was once an attempt to establish the meridian of Washington for the reckoning of longitude; but that meridian is very little used in practice; and it has no relation to what we call the day line. Moreover, Mr. Sumner appears to attach an unwarranted meaning to the well known expressions Old Style and New Style. These expressions properly refer to the reform of the Calendar instituted by Pope Gregory XII., in 1577, when ten days were dropped from the old reckoning."

It would be hard to press into the last two sentences more errors than our contemporary has fallen into. Mr. Sumner does not "attach an unwarranted meaning to the well known expressions old style, and new style." In fact, he uses them in the ordinary and proper meaning. The terms had their origin in the difference of reckoning adopted at the reformation of the Julian Calendar by Pope Gregory XIII., who, on the recommendation of Luigi Lilio Ghiraldi, Clavius, and other eminent astronomers, ordered that ten days should be passed over in the reckoning of time, in order that the Julian calendar might correspond with the true time. According to this regulation October 5th, 1582, became October 15th, and the date of the occurrence of the vernal equinox, which, in the 16th century, fell on March 11, according to the Julian system, was, of course, thereby transferred to March 21. This alteration was one of the most important features of the Gregorian reformation of the calendar, and was generally adopted in the succeeding centuries by European nations—"scientific" England being amongst the last to accept the improvement. The Gregorian mode of reckoning time is known as the new style, to distinguish it from the old style, or Julian method. Russia has not yet adopted the new style, and consequently Mr. Sumner was right in his use of the terms when referring to its introduction by us into Russian America. It is perhaps well to add that it was not in the year 1577, but in March, 1582, that this reform was introduced by Pope Gregory XIII., and not by Gregory XII., as our contemperary makes it, probably through an oversight in "correcting proof."

PETROLEUM AND SOME OF ITS FUTURE USES.

The value of petroleum amongst our exports is unquestionably great. The quantity of oil removed from the refineries of Pittsburg alone, for the fiscal year ending June, 1865, was 132,232 barrels, and in 1866, 354,907 barrels. For these two years, there were $625,189 paid in that district for tax on refined oil. The demand for petroleum in Europe during the year 1866 was calculated at 90,000,000 gallons. In 1863 we shipped to foreign ports 28,250,721 gallons; in 1864, 31,882,072; in 1865, 20,805,523 gallons; and in 1866 it had increased to 67,430,451. As was natural, the cost to purchasers decreased yearly, and now, in most parts of the world, it affords, at a moderate cost, an excellent light. This, however, is not its only use, for we find it used as a lubricator, a deodorizer, and for most purposes that

ordinary vegetable and animal oils have hitherto been used. Lately the petroloids have been converted to two very opposite uses: Dr. Van der Weyde has employed one of them, called chimogene —which he forms by condensing the vapor escaping during the distillation of petroleum—to produce ice; and he maintains that this substance will make it cheaper than it can be gathered from the lakes and transported to our cities. The scientific world is at present anxiously waiting the completion of the numerous experiments which are now made to ascertain how the petroloids may be successfully used as fuel. How useful it would be as such, owing to its lightness, facility of transportation, and its abundance—notwithstanding the anticipations of those who believe its supply to be comparatively limited —we believe all will admit. It is capable of producing a very intense heat, and we believe that, notwithstanding difficulties which are likely to retard its use at first, it will come into very general use. It is already used to saturate blocks of artificial fuel, and it has been also used by itself. Our readers will remember that a correspondent of the JOURNAL OF MINING, writing last April from Humboldt, Venango county, Pa., describes the manner in which the waste material, either naptha above 65° or 80° Baumè, or the residue heavy oil, is employed as fuel in a refinery with which he is connected. He gives evidence of the very high amount of steam furnished by this fuel for five hundred consecutive hours. His experience goes to prove that the petroloids may be used at least in stationary engines. Whether they are as valuable in locomotives and marine boilers—for the value of fuel does not depend altogether on its power of creating heat—remains to be demonstrated. Experiments which have been made in many places, and especially those made lately in our navy yard, appear to show most conclusively that they are. This being so, we will have a means of utilizing many of the products of petroleum which hitherto were wasted.

Scientific Meetings.

ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AND THE ARTS.

AGASSIZ VERSUS DARWIN — ORIGIN OF THE HUMAN RACES — THE BIBLE AND SCIENCE — METAPHYSICS AND SPIRITUALISM.

The section of natural history advertised a public meeting to be held last Tuesday, June 4th, at their room in the Cooper Union. No regular subject having been announced, Dr. Van der Weyde started a discussion on the comparative merits of the Agassian and Darwinian theories of the origin of species. He seemed inclined to the opinion that in the same manner as at present the different generations of the animal kingnom are renewed, not by repeated miraculous creations, but by established laws of reproduction, so in remote periods of the earth's existence, the different species were also produced after established laws of development, with which we are now unacquainted. He opposed the Agassian doctrine of the multiplicity of the origin of the different human races, and ably defended the theory that all men may descend from one common ancestery.

Dr. Richards, who presided at the meeting, in answer to some critical remarks by persons present, made the suggestion that, in our search after moral truths, the Bible must be our guide, but that when we seek a knowledge of the laws of Nature, and practical information, we must go to science alone. The meeting being entirely informal and conversational, several persons took part in the discussion, which, at last, unfortunately, took a metaphysical and spiritual turn. Dr. Van der Weyde having intimated how the mind of man was a result or outgrowth of his peculiar physical organization, one gentleman present asserted that the spirit of man is independent of the body, and even that the spirits of the present men may have pre-existed in other bodies on some other planet.

At this point of the discussion our reporter left.

We are in favor of free discussion, but we beg leave to call the Association for the Advancement of Science and Art to order.

Correspondence.

[To insure insertion of Correspondence in our columns the full name and address of the writer must be given.]

The Properties of Sodium Amalgam.

NEW YORK, June 11, 1867.

EDITORS JOURNAL OF MINING:

Gentlemen—Although the alloy of sodium and mercury, commercially known as sodium amalgam, has been shown to possess most curious and highly commendable virtues, not the least remarkable of which is the assistance it affords in the amalgamation of gold, the peculiar chemical and physical properties which enable this comparatively new material to exhibit such novel phenomena have not been sufficiently studied, and although these phenomena are glaringly observable in its practical employment, the principle of its action, and the essential attributes which qualify it for so estimable a service have not, as yet, been publicly proclaimed. Without pretending to have fully investigated the various properties of sodium amalgam, it shall be my endeavor, in the following lines, to record a few interesting facts which I have gathered from divers sources, and which directly bear upon the singular power that renders this substance so invaluable an auxiliary in the extraction of gold.

If a quantity of refined mercury be placed in a vessel of carbonic acid, and a very thin shaving of pure sodium cut in the gas, and thereby protected from the oxydising action of air, be thrown upon its surface, metallic contact is effected, and an immediate union of the two metals will ensue. So rapidly is the sensitive sodium affected by the atmosphere, that the most adroit manipulation usually fails to produce this result in the open air, and a chip of sodium placed ever so quickly upon the surface of mercury, contained in an exposed vessel, will float for several hours, or until the soda produced by its gradual oxidation deliquesces sufficiently to permit metallic contact. In practice, the combination of sodium and mercury metals may be effected in two ways—by heating the mercury, or by touching the floating sodium wih a moistened splinter of wood. This last method, suggested to me by Mr. M. B. Dodge, is, perhaps, least troublesome, and by its means I invariably procure the amalgam for experimental purposes. However effected, the reaction is always accompanied by deflagration and noise, and the resulting alloy is considerably heated. The chip of sodium treated by the last described method forms a sort of crystalline amalgam, having a less specific gravity than the mercury, in which it accordingly floats, and from which it may be easily removed. If over mercury containing this floating amalgam water be poured, a vigorous activity is immediately induced, and in a few seconds the crystalline material loses its identity, becoming diffused through the mercury to form a perfectly homogeneous compound. If a few ounces of amalgam so prepared, containing about two per cent. of sodium, be placed in a porcelain dish, and covered with water half an inch in depth, the following phenomena may be observed:

First. The whole metallic surface will be covered with minute bubbles of hydrogen, which are disengaged, and rise continually through the water, while the oxygen with which it was combined is appropriated by the sodium.

Second. Wherever a solid particle rests upon the metal, there the revolution of hydrogen is especially vehement, and is accompanied by rapid motions of the molecule.

Third. If into the amalgam a bar of polished iron be immersed, the general escape of hydrogen is perceptibly diminished, while a violent local action is determined.

Fourth. Iron so treated is beautifully, but only superficially amalgamated. However long it may remain immersed, iron is not penetrated by the mercury, as copper or zinc would be, but that a true amalgamation is effected, I have determined by carefully examining surfaces so prepared under the microscope, which revealed no essential difference between iron and copper or brass. Dr. Blaney, of Chicago, recently informed me that he discovered this property about fifteen years ago, while preparing sodium amalgam for the experiment with chloride of ammonium, and that he has since employed it to prepare iron surfaces for receiving electrometallic deposits.

Fifth. Almost any metallic surface, even though very much oxidized or greasy, may be quickly amalgamated by treatment with sodium amalgam.

Sixth. That the above described phenomena are due to a galvanic action dependent upon the oxidation of the sodium, I became long since convinced, and have demonstrated the proposition by constructing a sodium amalgam battery, whose activity is induced by the chemical action mentioned, and from which I have obtained very interesting effects. As the oxide of sodium is soluble in water, no acid is required, and a sustained power may be ensured by successive additions of fresh amalgam in small portions.

Upon the herein described properties of this curious alloy, depends its economic value in the metallurgical treatment of gold ores, and it is, therefore, a fallacious, though often advanced theory, that to the caustic soda produced by its decomposition in the pan, the increased yield of gold determined by its use is due.

It is my present intention to discuss, in a future paper, the relation of its properties to the effects of sodium amalgam in the amalgamation of gold, and also to detail at length the construction of a sodium amalgam battery, which being alkaline, is somewhat anomalous, and deserving of attention.

W. GOOLD LEVISON.

MEETINGS.

Chestnut Hill Iron Ore Company, at 327 Walnut street, Philadelphia, June 17, 12 M.; West Buck Mountain Coal and Iron Company, at 311 Walnut street, Philadelphia, June 25, 11 A. M.; Union Petroleum Company, of New York, at 74 Broadway, Room 18, June 18; Bergen Oil and Coal Company, at 10 Broad street, June 25; Golden Gate, of Montana, Mining Company, 177 Water street, July 2; Topeka and Apollo Gold Mining Companies, at 80 State Street, Boston, June 18, 2 P. M.; Highland Mining Company, at 58 City Exchange, Boston, June 26, 2 P. M.; Albany and Boston Mining Company, at 58 City Exchange, Bosfon, June 28, 11 A. M.

ASSESSMENTS.

Franklin Mining Company, at No. 19 Central street, Boston, $5 per share, now due, interest after 22d.

DIVIDENDS.

Imperial Silver Mining Company, $10 (gold) per share; Chollar-Potosi Mining Company $25 (gold) per share; Yellow Jacket Silver Mining Company, $75 (gold) per share, less exchange; Hale & Norcross, Mining Company, $133 per foot; Union Petroleum Company, of New York, at 74 Broadway, Room 18, 3½ per cent, June 18.

Patent Claims.

Interesting to Miners, Millmen, Metallurgists Oil-Men and Others.

The following claims have recently been issued from the United States Patent Office:

65,473.—MAKING STEEL DIRECT FROM THE ORE.—Thos. J. Chubb, Brooklyn, N. Y.

I claim, 1st. Treating purified iron sands or mechanically purified ore, by preparing, mixing, forming, or packing it into lumps, balls or cylinders, and afterwards deoxydizing, carbonizing, melting, casting, hammering or rolling the same at one or continuous through varying heat, substantially as described.

2d. The combination of the furnace, A, with the melting-pot or chamber, A', constructed and arranged for deoxydizing, carbonizing, converting or melting iron ore into steel, or metal having some of the properties of steel, substantially as described.

3d. Preparing, mixing and forming iron ore into lumps, balls or cylinders, and packing the same into casings made of clay, cast or sheet iron, or any suitable material for the purpose or purposes specified, and substantially as described.

4th. The employment of a long, narrow, nearly horizontal, or slightly inclined chamber, A, so constructed that ore in the form of lumps, balls or cylinders, may be fed in at one end of the said chamber or furnace, and discharged at the hollow end in the form of steel sponge, chemically changed as to the volatile matter combined with or contained in the said ore or metal, substantially as described.

5th. The employment of a long, narrow chamber, A, so constructed that it may be opened or closed at either end by gates, or their equivalents, for the admission of the substances to be melted or converted into cast steel or similar metal, and for the admission and discharge of air and gases, and for manipulating with bars or otherwise the substances under treatment therein, said chambers being also provided with a tap-hole and suitable movable partitions, or their equivalents, substantially as described.

6th. The arrangement of a mould-chamber, H, in combination with a melting-chamber, A', substantially as and for the purposes described.

7th. Converting purified iron sands, or mechanically purified iron ore, into steel sponge, or into a deoxydized spongy mass, by aid of gas or gases arising from a gas generator, when the same is passed through a re-heating operation, substantially as described.

8th. The combination of a gas generating furnace or apparatus, or passage leading therefrom, a gas and air-heating, or a heat-reclaiming or regenerative furnace and apparatus, with a chamber or chambers employed for chemically changing the volatile matter, combined with iron ore or iron sponge, substantially as described.

9th. The combination of a gas generating furnace, or passage leading therefrom, and a re-heating or regenerating furnace and apparatus with a mould chamber, H, for the purpose of heating or re-heating this chamber, the mould, or ingot or casting therein, for the purpose or purposes specified, and substantially as described.

10th. The employment of intensely heated moulds for casting ingots therein, when employed for retaining the heat in the castings preparatory to and for hammering or rolling the same, substantially as described.

11th. The employment in a heated mould, while casting or pouring the melted metal therein, of gas or gases for excluding the atmospheric air therefrom, substantially as described.

12th. The combination of a gas generating furnace or apparatus operated in connection with a gas or air heating, or a heat regenerating apparatus, with a deoxydizing and carbonizing furnace or chamber for the purpose of heating the same, substantially as described.

13th. The combination of a gas generating furnace operating

in connection with a gas and air heating or a heat regenerating apparatus with a deoxydizing and carbonizing furnace or chamber for the purpose of heating the same, substantially as described.

14th. The combination of a gas generating furnace operating in connection with a gas and air heating or regenerating apparatus with a melting chamber, furnace, or pot employed for melting or reducing steel sponge and deoxydized sponge or carburet of iron in the form of sponge into cast steel or metal similar to or having some of the properties of cast steel, substantially as described.

15th. The combination of a gas generating furnace or apparatus or passage leading therefrom, with a stationary chamber for deoxydizing magnetic proto or peroxyde of iron containing or not the oxyde of tetanium or other metal or refractory matter.

16th. The combination of a gas generating furnace or apparatus, or the passage leading therefrom, with a stationary chamber for reducing or melting of deoxydized sponge or ore in the form of sponge.

17th. The combination of a gas generating chamber or apparatus, or passage leading therefrom, with a chamber for heating moulds or the castings in the chamber in which they are formed.

18th. The combination of a gas generating furnace or apparatus or passage leading therefrom, with re-heating tubes or a chamber containing heated tubes constructed for and applied to the deoxydizing, heating, melting, or reduction of ores or metallic substances containing iron and in the form of sponge before, during or after such treatment or treatments, substantially as described.

19th. The employment of a heat reclaiming or a heat regenerative furnace or apparatus in combination with a chamber employed for heating a vessel or crucible containing iron ore or metallic sponge converting, cementing, and melting the same into steel.

20th. The combination of a heat reclaiming or heat regenerative furnace or apparatus with a stationary vessel or chamber, or chambers employed for converting, melting and cementing steel or metallic substances into steel.

21st. The immersion of steel sponge, or carburet of iron sponge, into a bath of molten steel or metal similar in nature or quality to the sponge, so that the sponge may be melted, and also a homogeneous liquid mass formed of it and the metal constituting the bath, substantially as described.

Special Scientific Brevities.

☞ **According to M. Classen, silver is wholly precipitated by cadmium;** when dealing with a nitric solution of silver, evaporate to dryness in the presence of sulphuric acid, dissolve the sulphate of silver in boiling water, plunge into it a plate of cadmium, and the reduction of the silver takes place at once. The silver is deposited in a compact mass, easily washed with water; as it may contain a little cadmium, boil it in the acid liquid until no hydrogen escapes; wash it until the water contains no sulphuric acid; then dry, and calcine; the silver, at first a black grey, takes the metallic lustre; it may then be weighed; the results are very exact.—*Chem. News.*

☞ **A raw compound of creosote and soda may be** employed for the manufacture of gas of a high illuminating power, by burning carbonate of soda in a close furnace. In the first step of the proceeding the water is driven from the material; the creosote and soda compound is then decomposed, a porous coke with which the soda is mixed being left. One result of the decomposition is the formation of a quantity of carbonic acid, the greater part of which unites with the caustic soda employed to produce the carbonate. The carbonate of soda is easily extracted from the coke, and may be used again and again.

☞ **A machine has been contrived which freezes water** by its own evaporation. It is simply an air pump fitted to a bottle. The bottle is half filled with water, and the pump is set to work. Air is first pumped out, and then the water rapidly evaporates. To complete the vacuum and increase the evaporation, the air and aqueous vapor pumped out is made to traverse a hollow cylinder containing sulphuric acid, which of course instantly absorbs the moisture. The evaporation is so rapid that the remaining water is immediately frozen. Four minutes' pumping produce two pints of ice.

☞ **The alloys of steel with platinum, when both are** in a state of fusion, are very perfect in every proportion that has been tried. Equal parts by weight form a beautiful allow, which takes a fine polish and does not tarnish; the color is the finest imaginable for a mirror. The specific gravity of this beautiful compound is 9.802.

☞ **The progress of the British Isles in practical** science may be inferred from a statement in the *Mechanics Magazine*, that "Dublin is the first of our cities, except London, that has as yet taken steps to procure a second steam fire-engine."

☞ **The value of improvements in machinery may be** estimated from the fact that in 1819 it required two furnaces, each with a nigh chimney shaft, to produce 1 000 feet of glass per week, while now two furnaces, with but one shaft, produce 12,000 feet, with the same if not a smaller consumption of fuel.

☞ **Argentine lead ore is deprived of its silver by** M. Cordure, by adding a small quantity of zinc to the fused ore. The zinc forms an alloy with the silver lighter than the lead, and thus brings it to the surface, where it cools and may be removed, re-melted and separated.

☞ **The fouling of mercury gauges may be prevented** (says *Engineering*), by introducing a few drops of glycerine in the tube, on the top of the mercury. The glycerine, by its superior adhesion, lubricates the glass and keeps the mercury from contact with it.

☞ **A quick process for getting drying Linseed oil** is given by Dr. Dullo. He boils the raw oil for two hours with binoxide of manganese and hydrochloric acid, and so gets a rapidly drying oil in very much less time than by the processes generally employed.

☞ **Dr. Richardson states that iodine placed in a** small box with a perforated lid, destroys organic poisons in rooms. In cases of small-pox, he has seen this method used with great benefit.

☞ **The Bethlehem *Daily Times* speaks highly of the** successful use of nitro-glycerine in the slate quarries near Slatington.

All Sorts.

☞ **A telegraphic dispatch, dated San Francisco,** June 2, states that a new island has been discovered in the North Pacific Ocean, between fifty degrees west longitude and forty degrees thirty minutes north latitude, twenty miles long. It is exactly in the track of vessels bound to this port from China and Japan. On the late return voyage of the steamship Colorado, she passed near the locality of the new island. Fogs and misty weather prevail in that section of the Pacific. It is supposed that many missing vessels have been wrecked there. The discovery is considered of sufficient importance to justify the government in despatching a vessel to locate the exact position of the island. A company has been organized to survey the island, and they will send vessels this week to examine and take possession of it.

☞ **A celebrated physician lay dying, and around** him stood three men eminent in his profession, who loudly deplored the calamity his death would be to the cause of science and of humanity. "Console yourselves, gentlemen," said the fast-failing man; "humanity will not suffer as you so sincerely apprehend, for I leave behind me three physicians, each greater than myself." Elated by this reply—for each sympathizing friend believed himself to be one of these great lights of the healing art—all pressed him to name the distinguished trio. "Air, diet, and exercise," said the wise man, and died.

☞ **A manufacturer in Boston lately remarked that** he had in his employ thirty girls whom he did not pay as much wages as their board amounted to. He was asked how he supposed they managed to live. "Oh," said he, "they are sharp enough for that." If the devil don't get such employers, it will be because he is cheated out of what belongs to him.

☞ **An absent minded professor, in going out of the** gateway of his college, ran against a cow. In the confusion of the moment he raised his hat, and exclaimed, "I beg your pardon, madam." Soon after he stumbled against a lady in the streets; in sudden recollection of his former mishap, he called out: "Is that you again, you brute?"

☞ **Every particle of rust on iron may be removed** by first softening it with petroleum, and then rubbing well with coarse sand-paper. To paint iron, take lampblack sufficient for two coats, and mix with equal quantities of Japan varnish and boiled linseed oil.

☞ **A country parson had a singular peculiarity of** expression, always using the phrase, "Flatter myself," instead of "I believe." Having occasion to exhort his congregation during a revival, he "flattered himself" that more than one-half of them were on the road to perdition!

☞ **"*Ni-l sine numine*," the motto on the seal of Col-**orado, means, "Nothing without a divinity or great first cause."

Lead Ores in the United States.

The only lead ores worked in this country are the sulphuret of galena and the carbonate of lead. Galena is found in Illinois, Wisconsin, Iowa, Missouri, New Hampshire, New York, Maine, Massachusetts and Connecticut.

The galena lead mines in Jo Davis county, Illinois, are the most extensive in the United States. Up to 1857 they had produced 820,622,869 pounds, valued at $41,824,913. The lead is pure and generally free from other ores, though sometimes mixed with zinc blende and iron pyrites.

The Missouri lead mines from 1840 to 1854 yielded 3,833,121 pounds. The ore is not so pure as the galena of Illinois, and is found associated with the sulphuret and silicate of zinc, pyritous iron and copper, carbonate of copper, carbonate of lead; and black oxides of manganese and cobalt. The most productive mines are in Washington, St. Francois and Perry counties.

The ores of Wisconsin and Iowa are very rich; are mined chiefly at Missouri Point and Shudsburg. In 1856 the mines in these two States shipped 2,201 tons to Chicago, and 6,076 tons to St. Louis.

The principal lead mines in New Hampshire are at Shibourne and Eaton, situated sixteen miles northeast of Mt. Washington, the principal summit of the White Mountains. The ores consist of argentiferous galena principally, and associated with them are the sulphurets of zinc, copper and iron.

The lead ores of New York are found in Dutchess, Ulster, Columbia, Washington and Rensselaer counties. A mine at Ellenville, Ulster county, yielded in 1863 galena which produced about 459,000 pounds of lead and sixty to seventy tons of pyritous copper, fifty tons of which produced 54.3 per cent. of metal.

The lead region of Maine is limited to a section bordering the State line on the West, and associated with the lead district of New Hampshire. The principal deposits are found at Parsonfield.

In Massachusetts lead mines have been opened at Northampton and Uxbridge. An analysis of that worked at Uxbridge gave silver to the extraordinary rate of 13.53 lbs. troy to the ton of galena.

Lead mining in Connecticut was carried on as early as 1851 at Middletown. The ore is argentiferous galena. Specimens have yielded 25 to 75 oz. of silver to 21 cwt. of lead. The ores are associated with calcspar, sulphate of baryta, flour spar, iron and copper pyrites.

Carbonate of lead is mined chiefly in North Carolina, Pennsylvania, South Virginia and Eastern Tennessee.

In North Carolina the Washington mine, Davidson county, yielded as early as 1861, $24,000 of silver and $7,253 of gold separated from 160,000 pounds of lead.

Pennsylvania has lead mines in Chester and Montgomery counties. The Chester county Mining Company in 1851 smelted 190,400 pounds of dressed ore, which produced forty-seven per cent. of lead. The lead ores are associated with zinc, copper, iron pyrites, silver, etc.

The South Western and Eastern Tennessee mines are of the State line in Wythe county Virginia. They produced 500 tons of lead in 1865.—*Pittsburg Journal.*

☞ **A. B. Berard of Paris has a patent for the** manufacture of steel. The principle may be stated in a few words as consisting mainly in effecting a series of successive oxidations and reductions. The chief agents employed for the purpose of this invention are air, water, steam, and reducing gases; the carbon is put in contact with the metal in order to effect cementation.

A SELF-ACTING FEEDER.

Our illustrations represent different forms of an improved feeder for boilers, a self-acting regulator and alarm-whistle. In Fig. 1 there is shown the feeder in its simplest form, as it is worked by hand. C is the

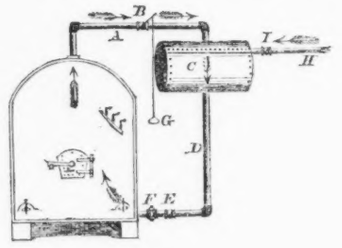

FIG. 1.

tank or feeder from which the water is supplied to the boiler at any pressure. It is connected with the upper part of the boiler by a ¾ inch pipe, and with the lower by D. The tank being full of water the steam valve B is turned on by means of the handle G, and in a few moments the water in C boils. The pressure in the boiler and in the tank are thus equalized, and the water from the latter descends by its own gravity through D into the boiler. By the pipe H a fresh supply of water for the tank is constantly obtained. The stop-cock F and the check-valve E regulate the passage of the water from the tank into the boiler. In Fig. 2 the feeder, self-acting regulator and

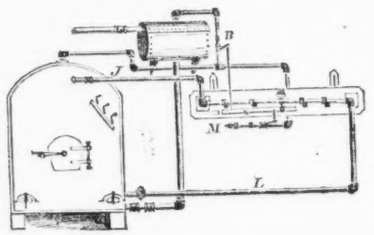

FIG. 2.

alarm-whistle are combined. J is a ½ inch tube connecting the boiler at the top with the buckling-tube K, which is made of brass. L connects the bottom of the boiler with the tube K. M the alarm-whistle at the termination of the steam-pipe which opens into the tank, N a lever operated by the buckling-tube, and which, by opening the working-valve B, of the tank, and the working-valve of the whistle, allows the steam to flow into both at the same time. The self-acting regulator consists of a brass buckling-tube, which is screwed into elbows cast on flanges, and bolted to a cast-iron frame. The tube being placed on a level with the proper height of the water in the boiler, will remain filled with water, till it evaporates below that level; then the water in the tube, following the level of the water in the boiler,

gives place to steam, the high temperature of which, coming into the brass tube, causes the metal to expand, but being firmly held at each end by the flanges, it bends or buckles up, which operating the lever and steam-valve, B, the process of feeding then goes on, the alarm-whistle blowing at the same time. In localities where the force of the water is sufficient to

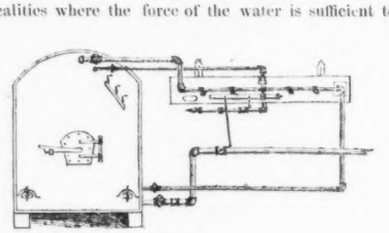

FIG. 3.

overcome the pressure of the boiler, the boiler may be fed directly without the tank. In such cases the regulator and whistle may be attached as in Fig. 3

the only difference from Fig 2 being that the water is taken directly from the main pipe. The following advantages are claimed for this feeder. It does away with force pumps and feeds the boiler at any pressure and with water at the same temperature as that already in it, saving the difference between 90 and 212 degrees. It is claimed also that with the feeder attached it is impossible for a boiler to explode. It will, under no circumstances, allow a variation of two inches of solid water from the point it is set for, boiler foaming or not; nor in case of steam under the water, without giving the alarm. By placing the hand upon the feeder it can be ascertained within two inches where the water is in the boiler at any time. If there is a fault in the main it will give the alarm on the instant. It is not liable to get out of order, and can be relied on at all times and under all circumstances. It can be attached to any steam-boiler now in use. For further information address Bond, Turnbull & Co., 351 West Twelfth street, New York.

Special Notices.

Manvel & Lindsay's Screw Wrench Manufactory.

We visited these works—Nos. 217 and 219 West 26th street—during the past week, to examine the different processes through which the patent wrenches—already described in the JOURNAL OF MINING—pass before they are sent to the market. As an illustration of the numerous steps which must be taken in the manufacture of a single tool, and also of what a proper division of labor can accomplish, the manufacture of this tool is worthy of attention. The bars of iron from which they are made, having been cut into proper lengths, are placed under the helve-hammer, and are drawn. They are then put into the fire, from which they are carried to a large drop-hammer; under this they assume what may be regarded as their first resemblance to the beautiful tools they become after completion. Having been trimmed, they are again placed in the fire, and afterwards in the finishing press. The shank is then drawn, and its end being trimmed, the process in the forging room is finished. They are now inspected, and those that pass this examination are annealed. They are brought, then, to another department of the factory, and are straightened. All irregularities and unevenness of the surface are removed by passing them through three planing machines, and through a fourth to make the rib on the back perfectly even. The shank is then prepared by several operations, the last being to cut at the end threads for the small screw which binds it to the handle. Having passed through these several stages, the bar is completed. The slide is cast from mallified iron, and having gone through the processes of broaching, milling, drilling, screwing, splining, and polishing, is ready for assembling. The ferrule, screw, and nut having been completed, all the parts are "assembled," and the tool is completed. Before it is case-hardened, it undergoes a rigid subjection, and again before it leaves the factory. Did our limited space permit a more extended description, we would wish to bring every stage of this interesting manufacture before our readers. We feel assured that, so rigid is the system of the manufacture of these tools, that a very superior article must inevitably result.

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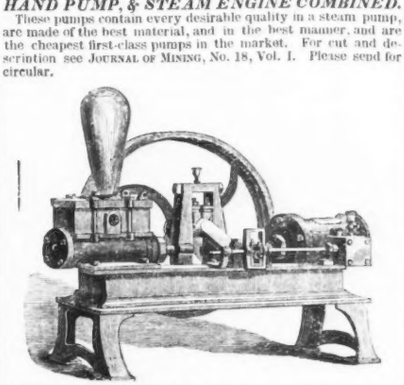

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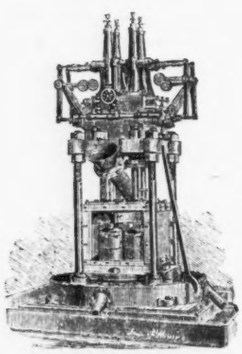

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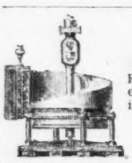

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9:3m

FOR SALE.

A VALUABLE SLATE PROPERTY FOR SALE.—WILL BE SOLD AT PUBLIC SALE, on Wednesday, the 12th day of June, 1867, at the Public House of Samuel J. Berger, Lehigh Gap Depot, L. V. R. R., Penn., at (1) o'clock, P. M., the following described Property:

A tract of Land containing about 21 Acres, on which is one of the most valuable SLATE QUARRIES now in operation. The material is particularly adapted for School Slates, Mantles, and Billiard Tables, and is the most extensive deposit of that class of Slate that has yet been developed in this country. The improvements thereon are: First,

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Second. A Frame dwelling and Store House, 24x46, with Kitchen and Wareroom attached. The Store sales amount to $10,000 annually.

Adjoining the Factory is a first-class site for a TANNERY, with sufficient water-power to do a large business.

The above described property is situated near Kresgeville, Monroe County, Penn., and is ten miles from Railroad. This subjects the Slate manufactured here to 15 cents per case cartage, in excess of the cartage paid by the manufacturers on the Lehigh.

The advantages of this Property are: 1st. The body of Slate is inexhaustible 2d. Slate can be quarried here and split at the Factory door for one-half the price paid for them on the Lehigh. 3d. The lumber used for frames and for boxing the Slates, costs 33⅓ per cent. less than other manufacturers have to pay. This arises from the proximity of the works to the Lumber country.

This is a rare chance for Capitalists and active business men to purchase a valuable property. One-fifth of said property was sold in 1863 for $12,000, before the improvements were erected.

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Terms and conditions made known on the day of Sale by

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L. E. WILLS,
ALLEN CRAIG,
Administrators of Thos. Craig, Deceased.

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ALLEN CRAIG, Mauch Chunk, "
L. E. WILLS, Kresgeville, " 9:3t

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For Sale, at Twenty-five Thousand Dollars, Two Tracts of Slate Land, in Heidelburg Township, Lehigh County, Penn., four miles from the Railway Depot at Slatington, containing Fourteen Acres, more or less, with Three Profitable Quarries, now at work, and capable of producing Six Thousand Dollars profit per annum, with an indefinite power of expansion. Terms, Ten Thousand Dollars cash, the residue on incumbrance, or in trade, at the option of buyers. Several Thousand Dollars have been expended in bringing these quarries to their present state of development. The Slate of these qurrries is the same as that of the best quarries in this region, being located on the same vein. The Company has prepared for filing the necessary papers for their incorporation under the name above mentioned, and will record them or not, as buyers may prefer.

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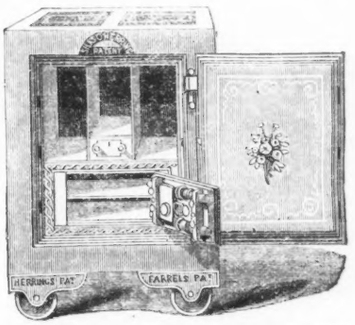

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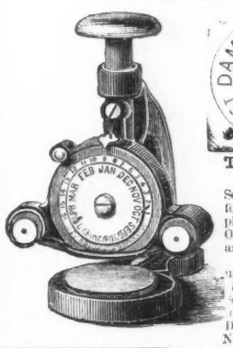

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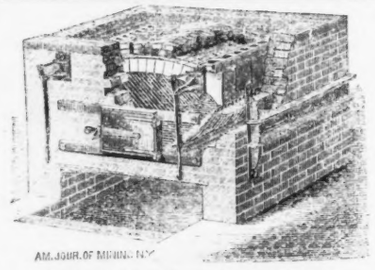

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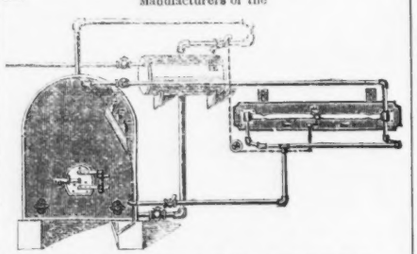

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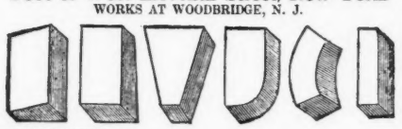

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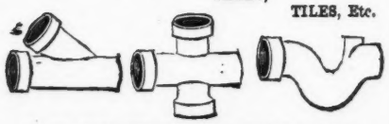

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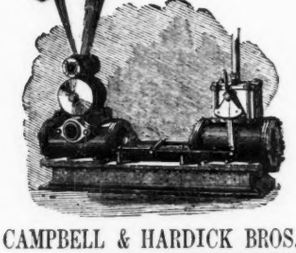

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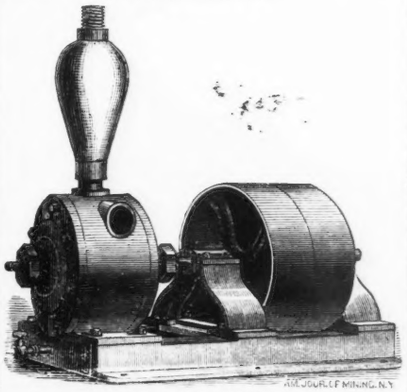

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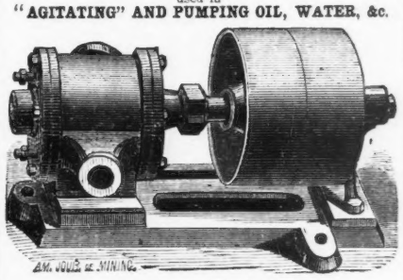

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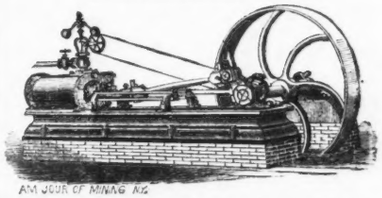

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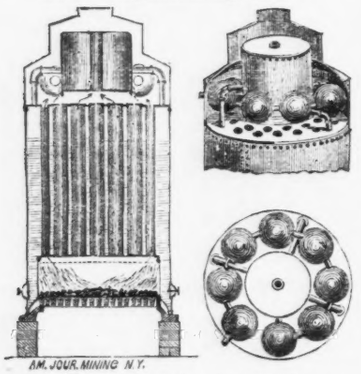

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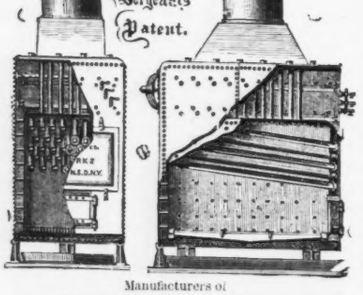

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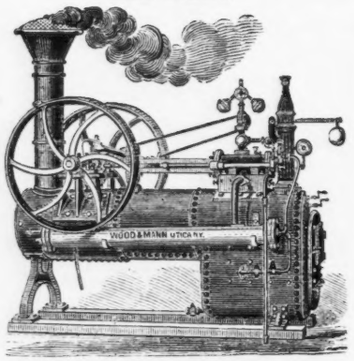

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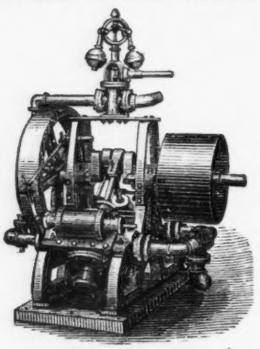

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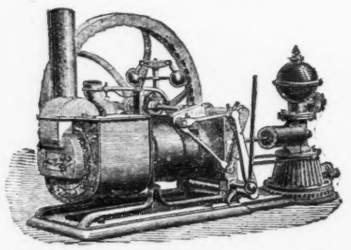

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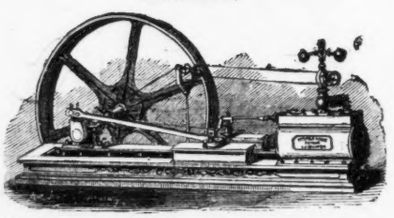

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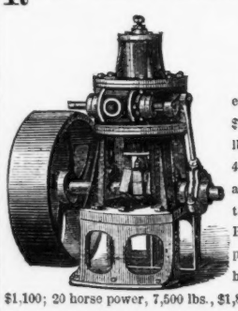

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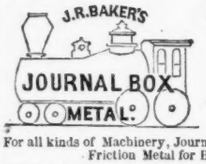

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